Studies on general practice out-of-hours care

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Caro van Uden

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Voor mijn ouders, ter nagedachtenis aan mijn vader

Aan Brigitte

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Chapter 1

General introduction

INTRODUCTION

Within the last ten years, the organisation of out-of-hours general practice in the Netherlands has experienced a radical shift from general practitioners (GPs) providing care to patients in small practice groups (rotas) to a situation where out-of-hours care is organised in large-scale GP cooperatives. This thesis focuses on the effect of this reorganisation on utilisation of out-of-hours care, and reports on patient and doctor satisfaction, costs, and triage aspects with respect to current out-of-hours GP cooperatives.

In the Netherlands, out-of-hours care was and still is an important part of general practice. Recently, the Dutch College of General Practitioners (NHG) and the Dutch Association of General Practitioners (LHV) have formulated a renewed mission statement on the content and tasks of general practice[1]. In this statement, personal continuity of care is emphasised as an important feature of general practice. Moreover, the 24-hour responsibility of GPs for their patients was acknowledged as one of the cornerstones of general practice.

Personal continuity of care has been proven to be strongly related to patient satisfaction with primary care[2], and the medical profession also emphasises the importance of continuity of care[3-5]. However, the changes in out-of-hours primary care organisation over the past decades have been an impediment for this personal continuity of care. Not only in the Netherlands, but also internationally.

Until the 1960s many GPs took care of their own patients during out-of-hours, which indicated that GPs were on call most of the time. There was one exception; during World War II a GP cooperative was already set up in The Hague. After the 1960s, more and more GPs formed small practice rotas (generally 6 to 8 GPs) in which they performed out-of-hours care to each other's patients. At first this covered only the weekends[6], but subsequently the evenings and nights on weekdays followed. This change in out-of-hours care provision was the first step to a less personal out-of-hours care provision, because GPs and patients were not so familiar with each other anymore. However, this reduced personal continuity of care may be only a minor problem, since research has indicated that there is not a strong preference for patients to be familiar with the doctor during out-of-hours[7]. Moreover, patients' reason for attending an out-of-hours care facility is most often the urgency of their complaint[8]. Nevertheless, there are some indications that older people prefer contact with their own doctor[9].

While in the 1990s almost all GPs were joined in practice rotas for their out-of-hours care, another reform announced itself. It was from the late

At the moment, Dutch out-of-hours primary care organisation most resembles the organisation in the UK and Denmark. Nevertheless, still many differences can be identified. For example, in Denmark telephone triage is performed by GPs, whereas in the Netherlands this is done by doctor's assistants. In the UK many different models of out-of-hours primary care exist next to each other, while in the Netherlands only the GP cooperatives are performing out-of-hours primary care (excluding the hospital emergency departments). The UK model of out-of-hours care that represents the Dutch situation the best is the GP cooperative.

THE DUTCH SITUATION

Nowadays, over 120 GP cooperatives in the Netherlands have been set up that cover over 90% of the population. There is some variety in the way these cooperatives are organised. Generally, there is a distinction in accessibility – GP cooperatives requiring telephone contact before a patient can attend the cooperative versus those that accept patients attending the cooperative on their own initiative – and a distinction in cooperation with the hospital emergency department. An important part of this thesis addresses issues related to the effects resulting from differences in organisation between GP cooperatives working in close collaboration with a hospital emergency department and those GP cooperatives that are organised independently of hospital emergency services.

Currently only three GP cooperatives in the Netherlands perform out-of-hours care in close collaboration with the hospital emergency departments[47]. In this thesis this form of collaboration is referred to as integrated out-of-hours care. This term is chosen, because out-of-hours primary and hospital emergency care in these systems is joined into one facility. In case of GP cooperatives that work independently from the hospital emergency department, but may have some agreements on referring patients to one another, we speak of a separated system. An important motive to join primary and emergency care is to improve GPs' grip on patients skipping primary care and attending emergency departments without a GP's referral. A large percentage of these so-called self-referred patients can as well be attended by GPs. An additional advantage of joining primary and hospital emergency in one out-of-hours care facility is that patients do not have to choose anymore which out-of-hours care facility they have to attend.

In the Netherlands the GP acts as a gatekeeper to secondary care. In the Dutch health care system all patients are required to have a referral from their family physician to utilize hospital services[48]. However, to be seen at a

hospital emergency department in the Netherlands, a referral is recommended but not strictly needed. As mentioned before, it has been found that large numbers of patients skip the GP and attend the hospital emergency department without referral[48]. Reasons for skipping the GP cited most frequently by patients are convenience, lack of timely access to primary care providers, the belief that the medical complaint was very urgent, and the belief that radiography is necessary[28, 49, 50]. A substantial number of patients attending the emergency department present with non-urgent or minor problems that can be resolved by a GP[31, 51]. Depending on setting and healthcare system, studies have shown that this number ranges from 17% to 57% [31, 41, 46, 51]. Reinstalling the GP gatekeeper function may have significant effects on hospital emergency care utilisation. Studies have shown that patients with minor injuries or primary care problems attending the hospital emergency department without referral can be treated safely and at lower costs in primary care[32, 41, 52].

The GP cooperatives in the Netherlands use telephone triage to prioritise patient treatment. During telephone triage the urgency of the patient's problem is assessed and a decision is made about the appropriate action to be taken. This decision includes giving self-care advice without seeing the patient, advising patients to attend their own GP the next day, referring patients to a GP at the cooperative, or ordering home visits. At most Dutch GP cooperatives the telephone is staffed by doctor's assistants. In addition, the doctor's assistant is supervised by a GP, who can be consulted in case of doubt and who authorises all calls handled by the doctor's assistant.

The telephone triage process is an important and critical link in the chain of out-of-hours primary care. It is essential that patients receive adequate and timely care, and therefore, telephone triage must be safe and effective. At all GP cooperatives in the Netherlands, triage protocols and guidelines are available to support the doctor's assistant. Some GP cooperatives have even started using computer based decision software[53]. Telephone triage is also an important aspect of out-of-hours primary care that is addressed in this thesis.

In the Netherlands, out-of-hours primary care as organised in GP cooperatives is more and more reaching a stable phase. Nevertheless, as also indicated by a recent report of the Dutch Health Care Inspectorate[53], many aspects still have to be improved or developed.

Before the start of the study presented in this thesis, it was largely unknown which specific effects different models of out-of-hours primary care have on care utilisation, patient and GP satisfaction, and costs. The studies in this thesis focus on these aspects in order to provide insight in

advantages and disadvantages of different organisations of out-of-hours care.

SETTING OF THE RESEARCH

The research in this thesis has concentrated mainly on the province of Limburg. In total, seven GP cooperatives (organised in five GP out-of-hours care organisations) are operational in this province providing out-of-hours primary care to a population of about 1.1 million inhabitants.

The first cooperative that was set-up in this region was the GP cooperative in the Heerlen region. This GP cooperative started in March 1999 performing out-of-hours care for a population of 100,000 inhabitants. In 2000 the number of participating GPs increased to 120 and the coverage area to approximately 285,000 inhabitants. In January 2000, the GP cooperative in Maastricht was set-up and was the first in the Netherlands that integrated primary and hospital emergency care. Because this was the first integrated cooperative and at the time of the study the only one, this GP cooperative is used in this thesis as a representative of integrated primary and hospital emergency care. Halfway through 2001 the other five GP cooperatives in the province of Limburg were set up. A more detailed description of some of these GP cooperatives, if relevant, is given in related chapters in this thesis.

AIMS OF THE STUDY

The purpose of this study is to gain insight into different aspects of out-of-hours primary care. These aspects are related to changes in care utilisation, costs, GP and patient satisfaction, and telephone triage. The results of the study can support health care professionals and health policy makers in optimising out-of-hours primary care in the Netherlands.

OUTLINE OF THE THESIS

This thesis describes the outcomes of different studies we conducted to gain insight in the current organisation of general practice out-of-hours care.

Chapter 2 focuses on the reorganisation of out-of-hours care in the Maastricht region and its effect on patient flow. More specifically, the

number of patients utilising out-of-hours primary care and hospital emergency care before and after the reorganisation have been investigated.

Chapter 3 reports differences in out-of-hours care utilisation between a GP cooperative located separate from a hospital emergency department and a GP cooperative which is functionally integrated with a hospital emergency department. In chapter 4 the costs of these two organisations are presented, and also the effect of integrating primary and hospital emergency care on costs of the hospital emergency department is described.

Chapter 5 reports of results of a study on GP satisfaction with and opinions on out-of-hours primary care organised in the separated model and the integrated model.

Chapter 6 describes the influence of the reorganisation of out-of-hours primary care to GP cooperatives functioning independent of the hospital emergency department on utilisation of hospital emergency services outside office hours.

Chapter 7 reports the findings of a large patient satisfaction study in the province of Limburg.

Chapter 8 focuses on telephone triage and compares patient and GP opinions between a cooperative that uses computer assisted decision software to guide the telephone triage process and a cooperative that uses only written protocols and guidelines.

Chapter 9 describes the results of a study that investigated the care process after patients have contacted a GP cooperative for out-of-hours care.

A general discussion is presented in chapter 10.

Because chapters 2 to 9 are based on research manuscripts published in scientific journals or submitted to a journal for publication, most of the chapters are written to stand alone and some repetition will be inevitable.

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Chapter 2

The impact of a primary care physician cooperative on the caseload of an emergency department. The Maastricht integrated out-of-hours service.

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ABSTRACT

Objective: To determine the effect of an out-of-hours primary care physician (PCP) cooperative on the caseload at the emergency department and to study characteristics of patients utilizing out-of-hours care.

Design: A pre-post intervention design was used. During a three-week period before and a three-week period after establishing the PCP cooperative, all patient records with out-of-hours primary and emergency care were analyzed.

Setting: Primary care in Maastricht (the Netherlands) is delivered by 59 PCPs. Primary care physicians formerly organized out-of-hours care in small locum groups. In January 2000 out-of-hours primary care was reorganized, and a PCP cooperative was established. This cooperative is located at the emergency department of the University Hospital Maastricht, the city's only hospital, which has no emergency medicine specialists.

Main Outcome Measures: The number of patients utilizing out-of-hours care, their age and gender, diagnoses, post-ED care, and serious adverse events.

Results: After establishing the PCP cooperative, the proportion of patients utilizing emergency care decreased by 53%, and the proportion of patients utilizing primary care increased by 25%. The shift was the largest for patients with musculoskeletal disorders or skin problems. There were fewer hospital admissions, and fewer subsequent referrals to the patient's own PCP and medical specialists. No substantial change in new outpatient visits at the hospital or in mortality occurred.

Conclusions: In the city of Maastricht, the Netherlands, the PCP cooperative reduced the use of hospital emergency care during out-of-hours care.

1990s onwards that out-of-hours care in the Netherlands was reorganised into large-scale GP cooperatives. In these cooperatives, generally between 40 and 120 GPs are joined, providing care for populations ranging from 80,000 to 300,000 inhabitants.

The main reason for reorganising out-of-hours primary care was the growing dissatisfaction among GPs with former out-of-hours care, GPs' decreased personal commitment with these services, and an impending shortage of GPs[10, 11]. Important factors leading to this dissatisfaction were: the workload accompanying these services, especially because after the out of hours service a regular day of work followed; the lack of separation between work and private; increased demand of out-of-hours care; and the perception of generally increased workload. Out-of-hours care used to be an extra load on the already demanding week of usual care in general practice. Studies have reported beneficial effects to GPs with the introduction of GP cooperatives for out-of-hours care, like improved GPs' health[12] and decreased levels of stress[13]. Moreover, in a Dutch study by Giesen et al.[14] it was found that GP satisfaction increased after reorganising out-of-hours care from practice based to cooperative based.

INTERNATIONAL PERSPECTIVE

The reorganisation of out-of-hours care in the Netherlands was preceded by reorganisations in out-of-hours primary care in the early 1990s in the United Kingdom (UK)[11, 15-20] and Denmark[21-24]. The changes in out-of-hours care in these countries are very similar to those that occurred a couple of years later in the Netherlands. In a way, one can say that the changes in out-of-hours care in the UK and Denmark have set an example for Dutch general practice. In countries like the UK and Australia, the trend away from GPs looking after their own patients at home during out-of-hours started already in the late 1960s with the use of deputising services[10, 11].

Internationally, there is diversity in health care systems offering primary care to patients outside normal office hours[10, 11, 15-46]. Mainly seven models can be identified that provide primary care to patients during out-of-hours. These are: (1) GPs taking care of their own patients; (2) practice-based services (GPs within a practice or rota looking after their own patients during out-of-hours); (3) deputizing services (commercial companies employing doctors to provide out-of-hours care); (4) GP cooperatives (GPs from different practices providing care for their own patients in a non-profit making organisation); (5) emergency departments; (6) primary care centres (a centre patients can attend); (7) telephone triage and advice centres (where primary patients receive telephone advice during out-of-hours).

INTRODUCTION

Primary care gatekeeping in the Netherlands, as in the UK[1], is less controversial than in the USA. Whereas in the USA only about 40% of the population has a primary care physician (PCP) who acts as a gatekeeper to specialist care[2], in the Dutch health care system all patients are required to have a referral from their PCP to utilize hospital services [3]. However, for an emergency department (ED) visit in the Netherlands a referral is not strictly needed. Many patients skip the PCP and attend the ED without referral [3]. In Maastricht (Netherlands) over 50% of all ED visitors were self-referred. Increasing numbers of self-referrals and lack of inpatient beds can cause overcrowding at EDs [4-8].

Many patients present non-urgent or minor primary care problems at the ED [7, 9]. Initiatives to deal with this problem were employing PCPs in EDs, establishing a separate stream for minor injuries, or directing patients with non-acute conditions to next-day care [10-16]. Such initiatives did not focus exclusively on out-of-hours care.

PCPs in the Netherlands have a 24-hour care responsibility for their patients. To deliver out-of-hours care, Dutch PCPs organized themselves in locum groups, establishing an out-of-hours coverage system [17]. Recently, out-of-hours care in the Netherlands was reorganized into larger PCP cooperatives, similar to British and Danish initiatives [17, 18]. An important motive for this change was the PCP's dissatisfaction with the high and increasing workload (out-of-hours care combined with regular work), and poor separation between work and private life.

Usually 40 to 120 full-time PCPs participate in these cooperatives, providing care for 80,000 to 300,000 patients. Currently, there are over 120 PCP cooperatives in the Netherlands providing out-of-hours primary care for approximately 90% of the Dutch population. By and large, the cooperatives are either situated at a central and easily accessible place at some distance from a hospital, or are located within or adjacent to a hospital.

In Maastricht, the PCP cooperative aims to decrease the number of self-referrals to the ED and to reduce PCP's dissatisfaction with the former out-of-hours care system. To that end, the Maastricht PCP cooperative was set up within the ED of the University Hospital Maastricht. Most other out-of-hours services, in the UK, Denmark, and in the Netherlands, work independently of the local hospital and do not provide an explicit gatekeeper function to specialist care. The current organization of out of hours care in Maastricht forces patients, attending the ED without referral, to be seen first by a PCP. When necessary, the PCP refers the patient to the ED. Because of this emphasis on PCP's gatekeeper function, we expected a

shift from ED services to primary care services for minor or non-urgent problems.

We assessed the effect of out-of-hours care in the city of Maastricht before and after the reorganization of the PCP's out-of-hours care.

METHODS

Setting

Maastricht is a city in the south of the Netherlands with a population of approximately 120,000 inhabitants. Out-of-hours service is delivered by 59 PCPs. Before the reorganization the 59 PCPs were organized into eight locum groups, delivering out-of-hours care separate from the ED. Per locum group, one PCP was on call. Consequently, each fulltime PCP had approximately 944 on call hours per year. In the new situation with PCP cooperatives for out-of-hours care this is reduced to 298 hours (70% reduction), because fewer PCPs are on call for the same population. Apart from telephone contacts and consultations at the practice or at the cooperative, the Dutch PCP also makes home visits.

January 2000 the Maastricht PCP cooperative was established. Every evening, night and during the weekends two to three PCPs, depending on the time of day, are present at the cooperative. Specially equipped chauffeured cars are available for home visits. Until 11pm a practice nurse is present at the cooperative, after 11pm one nurse from the ED supports the PCPs. Patients have free access to the PCP cooperative and can come without an appointment or phone call.

The public was informed about the out-of-hours care reorganisation by posters at their own PCP's practice and by the PCP's answering machine service. Patients were encouraged to use out-of-hours services only if they could not wait until the next day to consult their own PCP. There were no economic incentives for any particular behavior.

The University Hospital Maastricht is the only hospital in Maastricht, and its ED is the only ED. The ED is staffed by four to six emergency nurses and one surgical or orthopedic resident. There are no separate emergency medicine specialists. During out-of-hours there is always at least one medical specialist per specialty present at the hospital or on call. From 1993 to 1998 the total number of patients attending the ED increased from 22,248 to 27,358. The out-of-hours census increased from 12,976 patients in 1993 to 16,125 in 1998.

The most distinct feature of the new organization of out-of-hours care in Maastricht is that all patients attending the ED during out-of-hours without a referral are first screened by a PCP or the practice nurse. Screening of

these patients is performed based on the triage system developed by the Dutch College of General Practitioners. The triage system is not yet validated, but is considered a 'best practice' guideline. With this system the urgency of the patient's complaint is divided into four categories, from not urgent to highly urgent. PCPs are responsible for adequate triaging of these patients. Severe traumas and other severe conditions such as myocardial infarction or acute stroke will be classified as highly urgent and immediately directed to a medical specialist. Patients with cardiac problems are referred to an existing fast track cardiac care system. In 1998 the number of attendances at this emergency cardiac care unit was 4,925, in 2001 5,464 contacts were registered. Conditions with a lower urgency category will be examined and, if necessary, treated by the PCP. Ambulances also bypass the PCP cooperative.

About 60% of the Dutch population is compulsorily insured with public health insurance funds. The government determines the cover provided and the income-linked contribution. People with higher income need a private insurance. PCPs are paid by capitation for treatment of patients who participate in public health insurance funds and by fee-for-service for treatment of those with private insurance.

Data collection

To detect changes in number and characteristics of patients utilizing out-of-hours care before and after establishing the PCP cooperative we used a pre-post design, All patient contact registration forms, with respect to the PCP and the ED, during three weeks (January 15 to February 9) in 1998, and three week (March 5 to March 26) in 2001 were analyzed. Data included patient's age and gender, type of consultation (telephone advice, consultation at the PCP's practice or cooperative, and home visit), and reason for encounter. With respect to the ED records, data included patient's age and gender, type of referral, post emergency department (ED) care, and reason for encounter. Diagnostic information on the patient registration forms was coded by the researcher (CvU) according to the chapters of the International Classification of Primary Care (ICPC)[19]. In case of doubt an experienced PCP (HC) was consulted. Coding medical complaints by ICPC is considered reliable and valid[20]. Only patients from Maastricht city, based on postal codes, were included.

To detect serious adverse events we analyzed all new hospital outpatient visits and the number of deaths in Maastricht from the hospital's annual reports and the Central Database of Statistics Netherlands from 1998 to 2001 (two years before and two years after setting up the PCP cooperative).

The study was ruled exempt from review by the Institutional Medical Ethics Board.

Statistics

We used Pearson chi-square tests to test for proportional differences, and the level of significance was set at 0.05.

Table 1. Contact rate with out-of-hours care during the three-week data collection periods.

Number of contacts*	Before the establishment of the PCP cooperative (1998)		After the establishment of the PCP cooperative (2001)		Absolute change
	n	% (95% CI)	n	% (95% CI)	n (%)
Primary care	1592	72.4 (70.5 – 74.3)	1990	87.4 (86.0 – 88.7)	+ 398 (25.0)
Emergency care	607	27.6 (25.7 – 29.5)	288	12.6 (11.3 – 14.0)	-319 (-52.6)
Total	2199	100.0	2278	100.0	+ 79 (3.6)

* Significantly different distribution of patients utilizing primary or emergency care (Chi-square test: $\chi^2_{1df} = 223.06$; $p < 0.001$)

RESULTS

Table 1 lists the out-of-hours patient visits to the PCP and the ED during the two study periods. After setting up the PCP cooperative, the proportion of patients utilizing out-of-hours emergency care decreased by 52.6%, whereas the proportion of patients utilizing out-of-hours primary care increased (+25.0%) ($p < 0.001$).

Particularly, patients utilizing out-of-hours care with musculoskeletal or skin problems were responsible for this shift. The proportion of this patient group seen by the PCP increased by 125% ($\chi^2 = 81.84$; $P < 0.001$), whereas the proportion of these patients utilizing emergency care decreased by 60% ($\chi^2 = 12.72$; $P < 0.001$) (Table 2). ED data from 1998 showed that, of all patients during out-of-hours with musculoskeletal or skin problems, 84% was self-referred.

The overall referral rates to the ED during out-of-hours changed substantially after the establishment of the PCP's cooperative (Table 3). The number of self-referrals was reduced significantly, and the number of referrals by PCPs to the ED increased by approximately 45%.

With respect to patients utilizing out-of-hours emergency care after the reorganization, there was an absolute reduction of 39 hospital admissions,

Table 2. Characteristics of patients utilizing primary and emergency care during out-of-hours.

	Primary care physician				Emergency department			
	1998		2001		1998		2001	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Diagnoses*								
Musculoskeletal or skin	295	20.4 (18.3 – 22.5)	665	34.6 (32.5 – 36.7)	312	57.0 (52.9 – 61.2)	125	44.0 (38.2 – 49.8)
Respiratory tract	259	17.9 (15.9 – 19.9)	288	15.0 (13.4 – 16.6)	29	5.3 (3.4 – 7.2)	28	9.9 (6.4 – 13.3)
Digestive tract	234	16.2 (14.3 – 18.1)	250	13.0 (11.5 – 14.5)	54	9.9 (7.4 – 12.4)	31	10.9 (7.3 – 14.5)
Others	659	45.5 (43.0 – 48.1)	719	37.4 (35.2 – 39.6)	152	27.8 (24.0 – 31.5)	100	35.2 (29.7 – 40.8)
Total	1447	100.0	1922	100.0	547	100.0	284	100.0
Missing	145	9.1	68	3.4	60	9.9	4	1.4
*Chi-square test: χ21df = 81.941; $P < 0.001$					*Chi-square test: χ21df = 15.287; $P = 0.002$			
Gender*								
Male	601	42.0 (39.4 – 44.5)	927	46.6 (44.4 – 48.8)	336	55.6 (51.7 – 59.6)	160	55.6 (49.8 – 61.3)
Female	831	58.0 (55.5 – 60.6)	1062	53.4 (51.2 – 55.6)	268	44.4 (40.4 – 48.3)	128	44.4 (38.7 – 50.2)
Total	1432	100.0	1989	100.0	604	100.0	288	100.0
Missing	160	10.1	1	0.1	3	0.5	-	
*Chi-square test: χ21df = 7.243; $P = 0.007$					Chi-square test: NS			
Age*								
0-10 years	362	27.7 (25.2 – 30.1)	365	18.3 (16.6 – 20.0)	86	14.2 (11.4 – 16.9)	31	10.8 (7.2 – 14.3)
11-50 years	581	44.4 (41.7 – 47.1)	1009	50.7 (48.5 – 52.9)	347	57.2 (53.2 – 61.1)	129	44.8 (39.0 – 50.5)
>50 years	366	28.0 (25.5 – 30.4)	616	31.0 (28.9 – 33.0)	174	28.7 (25.1 – 32.3)	128	44.4 (38.7 – 50.2)
Total	1309	100.0	1990	100.0	607	100.0	288	100.0
Missing	283	17.8	-		-		-	
*Chi-square test: χ21df = 39.996; $P < 0.001$					*Chi-square test: χ21df = 21.768; $P < 0.001$			

Table 3. Referrals to the Emergency department (ED) and care after utilizing emergency care.

	1998		2001		Absolute change
	n	% (95% CI)	n	% (95% CI)	n (%)
Referral to the Emergency dept*					
Self	392	67.9 (64.1 – 71.7)	44†	16.4 (11.9 – 20.8)	- 348 (- 88.8)
GP	109	18.9 (15.7 – 22.1)	158	58.7 (52.9 – 64.6)	+ 49 (45.0)
Ambulance	58	10.1 (7.6 – 12.5)	51	19.0 (14.3 – 23.6)	- 7 (12.1)
Other	18	3.1 (1.7 – 4.5)	16	5.9 (3.1 – 8.8)	- 2 (11.1)
Total	577	100.0	269	100.0	
Missing	*30*	*4.9*	*19*	*6.6*	
*Chi-square test: $\chi^2_{1df} = 201.957$; $P < 0.001$					
Post-ED care*					
Hospital admission	114	20.0 (16.7 – 23.3)	75	32.2 (26.2 – 38.2)	- 39 (34.2)
GP	53	9.3 (6.9 – 11.7)	22	9.4 (5.7 – 13.2)	- 31(58.5)
Outpatient clinic	142	25.0 (21.4 – 28.5)	113	48.5 (42.1 – 54.9)	- 29 (20.4)
Elsewhere	4	0.7 (0 – 1.4)	1	0.4 (0 – 1.3)	- 3 (75.0)
None	256	45.0 (40.9 – 49.1)	22	9.4 (5.7 – 13.2)	- 234 (91.4)
Total	569	100.0	233	100.0	
Missing	*38*	*6.3*	*55*	*19.1*	
*Chi-square test: $\chi^2_{1df} = 99.645$; $P < 0.001$					

† These patients have been directed to the emergency doctor without formal referral, since they suffered from severe injuries and needed to be treated immediately.

indicating a decrease of 34%. Furthermore, the number of patients not receiving any post-ED care dropped 91%: from 256 patients in 1998 to 22 in the year 2001.

In 1998, PCPs handled a substantial number of health problems during out-of-hours by telephone. However, in 2001 the number of telephone consults halved, and the number of consultations at the PCP's office almost tripled (Table 4). Also, fewer home visits were made by the PCP.

In out-of-hours care, the PCP is confronted with four main categories of diagnoses: digestive problems, musculoskeletal problems, respiratory problems, and problems related to the skin and subcutaneous tissue (Table 2). Another large category is general and unspecified diagnoses (about 10% of all cases). At the ED in 1998 the two biggest medical categories were musculoskeletal and skin problems. These numbers reduced substantially after the establishment of the PCP's cooperative.

In 1998 a total of 76,088 new outpatient visits were registered (during office hours). In 1999 there were 78,726 new outpatient visits. In the first year of the PCP cooperative the total number of new outpatient visits decreased to 74,633. In 2001 this number hardly changed compared to the year 2000: 74,668 new outpatient visits. Annual numbers of death rates in Maastricht showed no significant changes after setting up the PCP cooperative. In 1998 1239 people died in Maastricht, in 1999 1217, in 2000 1268, and in 2001 1278. The population of Maastricht increased during this period from 120,179 in 1998 to 122,163 in 2001.

Table 4. Type of consultation performed by primary care physicians during out-of-hours.

	1998		2001	
Type of consultation*	n	% (95% CI)	n	% (95% CI)
Telephone advice	730	48.2 (45.7 – 50.7)	360	18.4 (16.7 – 20.1)
Consult at practice or cooperative	496	32.8 (30.4 – 35.1)	1431	73.1 (72.1 – 75.1)
Home visit	288	19.0 (17.0 – 21.0)	166	8.5 (7.2 – 9.7)
Total	1514	100.0	1957	100.0
Missing	*78*	*4.9*	*33*	*1.7*

* Chi-square test: $\chi^2_{2df} = 564.71$; $p < 0.001$.

DISCUSSION

This study showed a major shift in patient flow, from emergency care to primary care, after the establishment of the PCP cooperative integrated with the ED.

Although, for practical reasons, we could not involve a control situation, it is unlikely that the observed shift in patient flow has been caused by any other factor than the PCP's out-of-hours reorganization. No other substantial change in the health care system in Maastricht between 1998 and 2001 has occurred. The data collection periods were only three weeks long and were performed in different months. Annual reports of the PCP cooperative and ED however, showed little fluctuation in numbers of patients between January/February as compared to March. In addition, possible confounding because of seasonal changes particularly with influenza is unlikely, since we found no changes in the number of respiratory diseases. The observed changes are large enough to assume that they have not been altered by short or different data collection periods. The total number of patient contacts analyzed in this study is comparable to those in similar studies[13, 14]. Missing values in this study are considered random, because they were mainly caused poor handwriting on patient records.

In our study we used two indirect measures of health outcome: deaths and new outpatient visits at the city's only hospital. Although these measures are rather crude and do not supply us with direct information about the patient's health status, they give some insight in the occurrence of serious adverse events. Besides, the Dutch PCP is trained to be a gatekeeper to secondary care and is well equipped to decide whether a patient can be treated in primary care or should be referred to specialty care.

The absence of specialists for emergency medicine in the Netherlands does not affect the potential role of a PCP cooperative in relation to the ED, as the PCP can still act as gatekeeper to the ED. At the time that PCPs were considering reorganizing their out-of-hours service, the ED suffered from overcrowding, mainly caused by self-referred patients. Therefore, the integration of primary and hospital care during out-of-hours, while keeping professional autonomy, was no more than a logic step.

Several authors have reported inappropriate ED use. Depending on setting and healthcare system, studies have identified a substantial number of ED attendees as primary care patients ranging from 17% to 57%[7, 9, 12, 14]. The results of our study showed a 53% reduction of patients utilizing emergency care during out-of-hours. This suggests that about half of all attendees at the ED have minor problems that a PCP can solve. In the literature various other initiatives have been described to deal with this

substantial number of primary care patients at the ED [10-16]. These initiatives reduced waiting times[10], number of investigations[13, 14], number of referrals[13, 14], and hospital follow up care or admissions[12, 14]. In addition, health outcome was comparable to primary care patients at the ED treated by emergency staff[13, 14]. Our study showed comparable results with respect to reduced post-ED care, expressed by reduced admission rates and fewer subsequent referrals to the patient's own PCP and medical specialists. A reason for this reduction might be the result of the way PCPs function as gatekeeper in the out-of-hours setting[21].

On some points the current study differs from other studies on primary care patients at the ED [10-14]. First, in contrast to other studies that employed PCPs in the ED, this study focused exclusively on out-of-hours care. Second, the PCPs were not employed in the hospital's ED, but operated completely independently. Third, but most important, there was no primary care facility open to patients during out-of-hours other than the one located at the ED. Therefore this study gives a good insight into all patient contacts with out-of-hours care in the city of Maastricht.

The total number of patient contacts with out-of-hours care slightly increased with 3.6% from 1998 to 2001. This indicates an increase of no more than 1.2% per year. Considering the steady increase of about 4% per year in the number of patient contacts with the ED before the setting up of the PCP cooperative, and the increase of the Maastricht population (approximately 0.5% per year), we conclude that there was no significant increased demand or usage of out-of-hours care.

This study did not include a cost analysis. However, based on the reduced production at the ED the regional Health Insurance Fund has cut the hospital's annual budget with about $1.73 million US dollars. This amount is roughly balanced by the costs of the PCP cooperative, which are about $1.58 million US dollars. More specific cost analysis should be performed to supply detailed information on health care costs in the Maastricht situation. In addition, other studies have shown reduced health care costs with PCPs working at EDs[13, 14, 22].

The overcrowding at the emergency department, caused by patients with non-urgent health problems, has attracted worldwide attention. Considering the many patients with non-urgent problems utilizing emergency care, it is clear that there is a role for PCPs in the spectrum of emergency care. When the goal is to reduce inappropriate use of hospital emergency care, a close collaboration between primary and emergency care seems critical. Coleman et al.[23] showed that alternative services, separate from the hospital, offering first contact care for non-urgent health problems were likely to have little impact on the demand for emergency services. Therefore it may be essential to create an integrated care facility in which the PCP acts as a gatekeeper to

secondary care. In addition, one of the biggest advantages of the Maastricht out-of-hours care is that the patient always receives adequate care at a single site. No critical time is lost traveling from the primary care cooperative to the emergency department, since both services are at the same location. Moreover, continuity of care is well guaranteed, also because when patients have visited or contacted the PCP cooperative for out-of-hours care, the patient's own PCP receives a report the next day concerning this contact.

During the first year after the establishment of the PCP cooperative a small survey was held among employees (emergency nurses, physicians, managers, and PCPs) and patients. The results showed that all interviewed people, including emergency department staff, PCPs and patients, were satisfied with the current out-of-hours organization. The emergency department staff and physicians reported that they preferred the new out-of-hours organization compared to the former one (survey published only as internal report).

Ferris et al.[24] found little evidence of beneficial effects of gatekeeping on using secondary care. In contrast, other studies showed positive effects of primary care gatekeeping[25, 26]. During the 1990s, USA managed care organizations rapidly introduced the primary care gatekeeping system, but recently have begun to retreat from this system[1]. Although patients in the USA valued the primary care physician for first-contact care and coordinating care, they seemed to be dissatisfied when they perceive that their PCP kept them from seeing a specialist[27]. Also, PCPs seem not all to be in favor of gatekeeping. However, some believe gatekeeping improves their role as care coordinator[28]. European countries with gatekeeping systems spent less on health care as a percentage of their gross national product than those allowing direct access to specialists[29, 30]. High referral rates to specialist care are considered one of the contributing factors of the USA's exceptionally high healthcare expenditure[31].

In conclusion, study showed that a primary care cooperative for out-of-hours care located at the gate of the hospital can reduce the use of hospital emergency care, and provides the PCP with an important coordinative role within the health care system, complementing the ED in the provision of out-of-hours care.

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Chapter 3

The use of out-of-hours services: A comparison between two organisations.

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ABSTRACT

Objectives: To investigate differences in numbers and characteristics of patients utilising primary or emergency care due to differences in organisation of out-of-hours care.

Background: Increasing numbers of self referrals at the accident and emergency (A&E) department cause overcrowding, while a substantial number of these patients exhibit minor injuries that can be treated by a general practitioner (GP).

Methods: Two different organisations of out of hours care in two Dutch cities (Heerlen and Maastricht) were investigated. Important differences between the two organisations are the accessibility and the location of primary care facility (GP cooperative). The Heerlen GP cooperative is situated in the centre of the city and is respectively 5 km and 9 km away from the two A&E departments situated in the area of Heerlen. This GP cooperative can only be visited by appointment. The Maastricht GP cooperative has free access and is located within the local A&E department. During a three week period all registration forms of patient contacts with out of hours care (GP cooperative and A&E department) were collected and with respect to the primary care patients a random sample of one third was analysed.

Results: For the Heerlen and Maastricht GP cooperative the annual contact rate, as extrapolated from our data, per 1000 inhabitants per year is 238 and 279 respectively ($\chi^2_{(1df)} = 4.385$, $p = 0.036$). The contact rate at the A&E departments of Heerlen (n=66) and Maastricht (n=52) is not different ($\chi^2_{(1df)} = 1.765$, $p = 0.184$). Some 51.7% of the patients attending the A&E department in Heerlen during out of hours were self referred, compared with 15.9% in Maastricht ($\chi^2_{(1df)} = 203.13$, $p < 0.001$).

Conclusions: The organisation of out of hours care in Maastricht has optimised the GP's gatekeeper function and thereby led to fewer self referrals at the A&E department, compared with Heerlen.

INTRODUCTION

Increased utilisation of emergency care has been reported by several authors [1-4]. It has been argued that this leads to overcrowding of the accident and emergency (A&E) departments, which can be seen as the biggest impediment of timely and adequate emergency care [2, 3, 5]. A substantial number of patients using emergency care exhibit minor problems that can be treated by a general practitioner (GP)[5, 6]. There have been several initiatives reported dealing with this problem, like employing GPs in A&E departments or by establishing a separate stream for minor injuries [7-11]. All these initiatives mainly focused on reducing the number of primary care patients utilising emergency medicine.

In the Dutch healthcare system the GP acts as a gatekeeper to secondary care. As a rule, patients need a referral from their GP to use hospital services [12]. However, to attend an A&E department a referral is recommended but not strictly needed. Many patients skip the GP and attend the emergency department without referral [12].

In the past few years GPs out of hours care has been reorganised substantially, motivated by increased dissatisfaction of GPs with former out of hours care. Like in other countries GPs in the Netherlands used to organise their out of hours services in locum groups, in which they joined a rota system[13]. In recent years, large GP cooperatives have been set up following British and Danish examples [14, 15]. Generally 40 to 120 full time GPs participate in these services, providing care for populations ranging from 80 000 to 300 000. There are however, differences in the way these GP cooperatives are organised, such as differences in location (located next to the A&E department of a hospital or in a separate distant building at the centre of a city or a rural area) or differences in accessibility (free access compared with appointment only).

There are no publications on the effect of different organisation structures of out of hours services by GPs on patient flow. Therefore it is not known to what extent these differences influence attendance of patients at emergency departments and GP cooperatives, or the way care is provided outside normal working hours.

In this study we compared two types of GPs out of hours services. One is located at the A&E department of a hospital and has free access (Maastricht), and another that is located in the centre of a city where patients can only present themselves by telephone (Heerlen). We envisage that especially the location of these cooperatives influences the number of patients attending the local emergency department (see fig 1). In the first situation the GP's gatekeeper function during out of hours seems fully established, because all patients seeking care during out of hours, including

those patients attending the A&E department without referral are first seen by a GP. In other words, skipping the GP and directly attending the A&E department is not possible. The GP decides which treatment is most appropriate and whether referral is needed.

The objective of this study is to evaluate the effects of differences in the organisation of GP's out of hours services on the number and the characteristics of patients using out of hours primary and emergency care.

METHODS

Setting

This study compares the use of out of hours services (A&E departments and GP cooperatives) in two Dutch cities and their surrounding areas; Heerlen and Maastricht. The distance between both cities is about 20 km.

In Heerlen the GP cooperative is located in the centre of the city of Heerlen and serves a population of 278 000 patients, with 120 participating GPs. During this study the area of Heerlen had two A&E departments operational during out of hours, together serving a population of 300 000 patients. These A&E departments are about 5 km and 9 km away from the GP cooperative, and are located in the suburbs of Heerlen and the centre of a nearby city (Kerkrade), respectively.

The GP cooperative Maastricht is situated at the A&E department of the university hospital Maastricht and serves a population of 190 000 patients, with 83 participating GPs. The university hospital Maastricht is located in the suburbs of Maastricht. Both regions consist of rural and urban areas.

Data collection

During a three week period in June 2001 in Heerlen and from 22 September to 15 October 2001 in Maastricht, all data of patient contacts with both GP cooperatives and A&E departments in the corresponding areas were collected. We used standard registration forms completed for every patient contact. Every third consecutive patient contact with the GP cooperative was entered into a database and was analysed. With respect to the A&E departments all data were analysed.

We had no reason to believe that the differences in registration periods may account for relevant differences between the datasets. Neither of these periods included bank holidays or the summer vacation period, which might influence contact rates. Also Salisbury *et al.* [16] showed only little seasonal variation. We assume that the distribution of patient contacts characteristics

remains comparatively stable over various periods, and therefore differences in characteristics are not likely to be caused by differences in these data collection periods. In August 2001 the patient population of the GP cooperative of Maastricht expanded from 120 000 to 190 000 patients, with the inclusion of 24 GPs from the Maastricht area. With this expansion the comparability between both regions (distribution of rural and urban areas) increased, which is one of the reasons we choose to perform data collection in September and October in Maastricht.

Outcome measures

Main outcome measures involved number of patient contacts, diagnostic information, type of consultation with the GP cooperative, and referrals to the A&E department. Because of lack of detail of telephone consultations, we only analysed patient contact characteristics with respect to consultations at the GP cooperative and home visits. With respect to total number of patient contacts all data were used. The diagnostic information was coded according to the chapters of the International Classification of Primary Care (ICPC) [17].

Statistics

Pearson's χ^2 tests were carried out to test for differences and the level of significance was set at 0.05.

Table 1. Characteristics of patient contacts with out-of-hours care.

		Heerlen	Maastricht	Chi-square Value	Sign. *P*
Population	GP co-operative	278,000	190,000	-	-
	A&E department	300,000	190,000		
Contacts/1000/ year	GP co-operative	238	279	$4.385_{df=1}$	0.036
	A&E department	66	52	$1.765_{df=1}$	0.184
Self referrals at A&E department		51.7% (n=592)	15.9% (n=90)	$203.13_{df=1}$	<0.001
GP co-operative	Consultation	47.6%	62.8%	$169.11_{df=2}$	< 0.001
	Telephone consultation	39.0%	29.8%		
	Home visit	13.4%	7.4%		

RESULTS

Over the three week periods that were monitored, in total 3825 contacts were registered in the Heerlen GP cooperative, and 3054 contacts in the Maastricht GP cooperative. In the A&E departments, 1152 contacts and 567 contacts were recorded in Heerlen and Maastricht respectively. We extrapolated the data to an annual contact rate per 1000 inhabitants per year. For the Heerlen and Maastricht GP cooperative the annual contact rate per 1000 inhabitants per year is 238 and 279 respectively ($p = 0.036$). The contact rate at the A&E departments of Heerlen and Maastricht is not different ($p = 0.184$) (see table 1).

In Heerlen, comparatively more patients receive telephone advice, fewer patients attend the GP cooperative for a consultation, and more patients are paid a home visit compared with Maastricht. These differences were statistically significant ($p < 0.001$).

Some 51.7% of the patients attending the A&E department in Heerlen were coded as self referred, compared with 15.9% in Maastricht ($p < 0.001$).

GPs in Maastricht saw comparatively more patients with musculoskeletal problems, and less circulatory problems compared with GPs in Heerlen ($p < 0.001$ and $p = 0.002$ respectively) (see table 2).

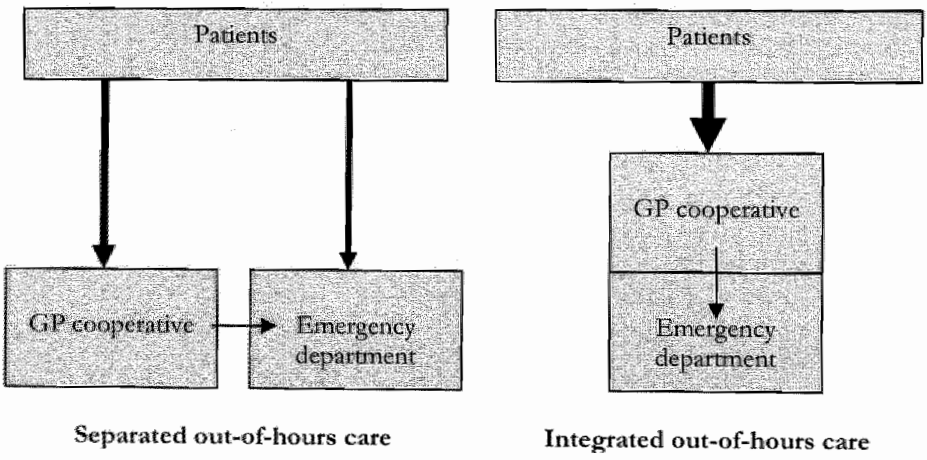

Figure 1. Out-of-hours care organisation.

Table 2. Patient's complaints subdivided according to the chapters of the International Classification of Primary Practice (ICPC). This data concerns only consultations at the co-operative and home visits.

		GP co-operative Heerlen		GP co-operative Maastricht		Chi-square	Sign.
Code	ICPC chapter	n	percentage	n	percentage	value	*P*
A	General and unspecified	76	9.5	108	10.0	$0.124_{(1df)}$	0.725
B	Blood, blood forming organs [a]	5	0.6	4	0.4	-	-
D	Digestive	108	13.6	117	10.9	$3.141_{(1df)}$	0.076
F	Eye	35	4.4	42	3.9	$0.283_{(1df)}$	0.595
H	Ear	32	4.0	40	3.7	$0.113_{(1df)}$	0.736
K	Circulatory	69	8.7	55	5.1	$9.358_{(1df)}$	0.002
L	Musculoskeletal	102	12.8	212	19.7	$15.552_{(1df)}$	< 0.001
N	Neurological	31	3.9	43	4.0	$0.012_{(1df)}$	0.911
P	Psychological	25	3.1	19	1.8	$3.768_{(1df)}$	0.052
R	Respiratory	100	12.6	123	11.4	$0.558_{(1df)}$	0.455
S	Skin	133	16.7	216	20.1	$3.417_{(1df)}$	0.065
T	Endocrine, metabolic and nutritional [a]	7	0.9	4	0.4	-	-
U	Urology	44	5.5	65	6.0	$0.220_{(1df)}$	0.639
W	Pregnancy, childbirth, family planning	12	1.5	7	0.7	$3.345_{(1df)}$	0.067
X	Female genital system and breast	11	1.4	6	0.6	$3.455_{(1df)}$	0.063
Y	Male genital system	4	0.5	8	0.7	$0.417_{(1df)}$	0.518
Z	Social problems [a]	2	0.3	1	0.1	-	-
Total		796	100	1075	100		

[a] One of the cells has an expected count less than 5, and therefore no Chi-square test is performed.

* The overall Pearson Chi-square test showed a significantly different distribution of complaints between both co-operatives ($\chi^2_{(16df)}$, $P < 0.001$).

DISCUSSION

We found no difference in the total number of patient contacts with out of hours emergency care, between Heerlen and Maastricht. However, in Maastricht significantly more patients were seen by a GP, with fewer self referrals to the A&E department.

The contact rate per 1000 patients per year in Heerlen is comparable to another Dutch study by Van Duijn *et al.* [18]. However, other studies, mainly in the UK, report lower contact rates [13, 16, 19] (130 to 176 per 1000 patients per year). Also higher contact rates have been reported (423 to 514 per 1000 patients) [15, 20]. Different aspects of the national health care system and definition of out of hours may account for these differences.

The number of self referrals to the A&E department in Maastricht is much lower than in Heerlen. This is caused by the fact that in Maastricht the GP's gatekeeper function is fully established. The GP decides with respect to all patients attending the GP cooperative and A&E department whether a patient is suitable for primary care or if the patient should be referred to the A&E department. Patients entering the hospital with obviously very severe injuries are immediately directed to the A&E department and are registered as self referred, while in fact they are not. This completely explains the 15.9% self referrals in Maastricht.

Assuming that minor injuries mainly relate to musculoskeletal problems and skin or subcutaneous wounds, it is obvious that the Maastricht GP cooperative sees more of these patients at the GP cooperative or during home visits. These two chapters of the ICPC together account for 40% of all disorders as presented at the GP cooperative in Maastricht, compared with 30% in Heerlen (see table 2). The finding that GPs in Maastricht seem to handle fewer patients with circulatory problems, lays probably in the fact that in Maastricht patients with clear cardiac complaints are directly referred to the cardiologist, and thereby bypassing the GP cooperative.

Despite the selection function of the GP in Maastricht, there was no statistical difference in the number of patients using emergency care between Heerlen and Maastricht. As reported in the literature a lot of patients using emergency care exhibit minor injuries that can be taken care of by a GP [5, 6]. Therefore we expected less attendees at the Maastricht A&E department in comparison with Heerlen. There may be two explanations for not finding a difference between these two A&E departments. Firstly, the A&E department in Heerlen advises patients with minor injuries, in case of crowdedness at the A&E department, to contact the GP cooperative. This causes a reduction of the number of patients using emergency care. However, it is unclear how many patients are advised to do so, and eventually attend the GP cooperative. Secondly, there used to be three A&E

departments serving the Heerlen region population. A couple of months before this study, one A&E department was closed during out of hours. This may also have caused a number of patients with minor injuries to decide not to attend one of the other two A&E departments, as their travel distance to the nearest A&E department had increased. This assumption is supported by a study of O'Reilly *et al.* [21].

This study also showed that GPs in Maastricht performed more consultations at the GP cooperative than their colleagues in Heerlen. There are two predominant explanations for this difference. Firstly, the former self referrals in Maastricht used to enter the A&E department without an appointment, and now enter the GP cooperative also without an appointment. Secondly, because the GP cooperative in Heerlen uses telephone triage, patients are seen by appointment, which enables the GP cooperative to handle a substantial number of patient contacts by telephone. In Maastricht, annual reports showed that only about 25% of all consultations at the GP cooperative were preceded by a telephone consultation.

As suggested by others, there is need for primary care at the A&E department [5, 6]. Supplying primary care outside a hospital will only partially fulfil these needs, as numerous patients believe that they should be treated in the A&E department [11]. The organisation of out of hours care in Maastricht ensures that all primary care patients are treated by GPs in contrast with Heerlen. Overcrowding at the A&E department as caused by patients with minor problems is likely to be reduced more in Maastricht than in Heerlen. However, this is not supported by the results of this study. The most important benefit of the way out of hours care as organised in Maastricht, is that health care is optimally geared to the symptoms of the patient, which implies efficient and appropriate care. The role of the GP as gatekeeper to secondary care is fully established. Patients needing emergency care are directly referred to the A&E department and primary care patients are seen by a GP. In addition, patients no longer need choose between attending a GP cooperative or the A&E department. They are always in the right place.

The organisation of out of hours care in Maastricht supports close collaboration between primary and emergency care. This offers possibilities for exchanging expertise and clinical knowledge. We hope to investigate this aspect in future research.

In summary, the organisation of out of hours care in Maastricht has optimised the GP's gatekeepers function and led to fewer self referrals at the A&E department, compared with Heerlen.

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Chapter 4

Out-of-hours primary care. Implications of organisation on costs.

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ABSTRACT

In the Netherlands, general practice out-of-hours care has experienced a radical change in its organisation during the last ten years. In former days, general practitioners (GPs) used to perform these services in small-scale practice rotas, whereas nowadays they have organised themselves in large-scale GP cooperatives. As a result of the rapid development and local preferences, the organisation of out-of-hours primary care varies from region to region. In this study we investigated costs of an out-of-hours model in which the GP cooperative operates separate from the hospital emergency department (ED), and costs of an out-of-hours model in which the GP cooperative is integrated with the hospital ED. In addition, the costs of the hospital ED of the integrated model before and after the set up of the GP cooperative were analysed. Previous studies have shown that integrating the GP cooperative with a hospital ED results in a substantial reduction in patients utilising hospital emergency care and an increase in patients utilising primary care. It was expected that this shift would have an effect on costs of out-of-hours care. This study was performed to provide insight in costs of these two different models of out-of-hours care in order to support health care professionals and policy makers in developing out-of-hours primary care. The study results show that the costs of primary care appear to be more dependent on the size of the population the cooperative covers than on the way the GP cooperative is organised, i.e. separated versus integrated. In addition, despite the substantial reduction of patients, locating the GP cooperative at the same site as the ED was found to have little effect on costs of the ED. Sharing more facilities and personnel between the ED and the GP cooperative may improve cost-efficiency.

INTRODUCTION

Within the last ten years, out-of-hours primary care in the Netherlands has been substantially reorganised. Formerly, general practitioners (GP) used to be organised in small groups of GPs in which they joined a rota system. Nowadays large-scaled GP cooperatives have been set up to provide out-of-hours primary care. The current organisation of out-of-hours primary care is very similar to that in the UK and Denmark [1, 2]. Many aspects of out-of-hours primary care have already been investigated, however, little is known about costs of current out-of-hours care as organised in GP cooperatives.

The organisation of out-of-hours care in the Netherlands varies from region to region. This is mainly due to local preferences and the rapid development of GP cooperatives. The GP cooperatives vary with respect to size of the population, number of participating GPs, accessibility, and location close to or separate from a hospital emergency department (ED). In the Netherlands, there is currently debate on the position and the role of the GP during out-of-hours care, and how out-of-hours care should be organised. More specifically, the debate focuses on the cooperation and the positioning between GP cooperatives and EDs. The Dutch minister of Health has argued that GP cooperatives should seek close collaboration with hospital emergency departments, and favours an integrated model in which the GP cooperative and the ED work closely together at the same site [3]. Many GPs however, are still reluctant to go towards a closer relationship with the hospitals' EDs, mainly because they are afraid to loose their identity and autonomy as GP. Obviously, it is essential that this discussion is supported with objective data on differences (advantages or disadvantages) between the out-of-hours care models.

In a recent publication we showed that different models of out-of-hours care, i.e. integrated versus separated out-of-hours system, have different implications on the utilisation of out-of-hours primary care [4]. In the integrated system the GP cooperative is located at the site of the hospital emergency department (ED) and sees all non-referred patients who attend the out-of-hours care facility. This implicates that no self-referred patient can enter the ED without first having been seen by a GP of the GP cooperative. The separated system has a GP cooperative located away from the hospital ED, and patients can choose to attend the primary care facility or the hospital ED. We found that the integrated model has the potential to reduce the number of patients utilising hospital emergency care with approximately 50% [5]. As a consequence, substantially more patients are seen at the integrated GP cooperative compared to the separated GP cooperative [4, 5].

In addition to information on utilisation of out-of-hours care, we have also investigated patient satisfaction in South of the Netherlands, covering a region with one integrated cooperative and four separated cooperatives[6]. Detailed analysis, which was published in an internal report[7], showed that there were only few differences between cooperatives and they were not directly related to the way out-of-hours care was organised in relation to the hospital ED. However, in their comments, some patients mentioned to prefer the integrated cooperative, because primary and hospital emergency care facilities are available at the same site.

So far, little is known about the differences in costs between an integrated out-of-hours care model and a separated out-of-hours care model. One would expect that reallocating patients during out-of-hours from hospital emergency care to primary care facilities may have effect on the costs of the GP cooperatives and the hospital ED. It is expected that the reduction of patients using ED care may cause a reduction in costs of the ED. The necessity of information on costs to support the discussion on the out-of-hours care organisation of preference is evident.

The objectives of this study are to determine the costs of two differently organised GP cooperatives (integrated versus separated), and to determine the effect of setting up a GP cooperative integrated with the ED on these costs.

METHODS

To gain insight in costs of a separated GP cooperative and an integrated GP cooperative we studied two cooperatives in the Southern part of the Netherlands. As an example of a separated model we chose the GP cooperative in the Heerlen region, and as a representative of an integrated cooperative we studied the GP cooperative in Maastricht (see Figure 1). Also, data on use of out-of-hours primary care was collected.

Setting

The separated GP cooperative

The separated GP cooperative was set up in March 1999. It started with taking care of a population of approximately 100,000, but expanded in 2002 to a population of 285,000. In this region one hospital ED is open during out-of-hours. The distance from the Heerlen GP cooperative to this ED is approximately 5 km. At the moment about 120 GPs participate in the separated GP cooperative. The GP cooperative is open from 5 pm to 8 am

on weekdays, and from 5 pm on Friday to 8 am on Monday. In the evenings the GP cooperative is staffed with five GPs, and during the night only two GPs are present. During daytime in the weekends, the GP cooperative is staffed with seven to eight GPs.

Patients are stimulated to make a phone call before attending the cooperative. This allows the GP cooperative to triage patients at urgency levels of their medical complaints in order to prioritise treatment. This process of telephone triage is performed by doctor's assistants. In the evenings there are five to six doctor's assistants at the cooperative, and during the night there are only two. During the day in the weekends, eight or nine doctor's assistants are present.

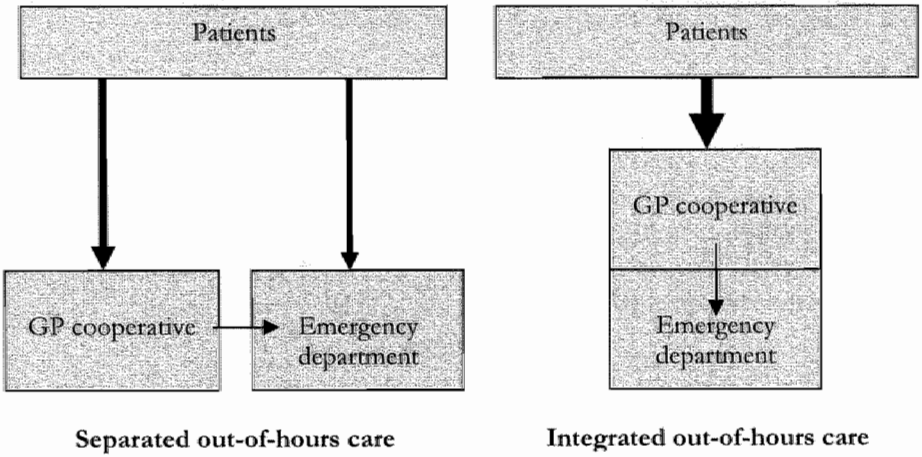

Figure 1. Organisation of out-of-hours care (patients with referral or brought in by ambulance bypass this system and go directly to the ED).

The integrated GP cooperative

The integrated GP cooperative was set up in January 2000. During the first year, this GP cooperative covered only the population of the city of Maastricht (approximately 120,000 inhabitants). In August 2001 the surrounding area of Maastricht joined the GP cooperative, increasing the coverage area to 190,000 inhabitants. Only one ED is open for this region which is located at the same site as the GP cooperative. All patients attending the integrated out-of-hours care facility without referral are first seen by a GP, who refers, if necessary, the patient to the ED. At the moment 83 GPs participate in the integrated GP cooperative. The GP cooperative is open from 5 pm to 8 am on weekdays, and from 5 pm on

Friday to 8 am on Monday. In the evenings the GP cooperative is staffed with three GPs on weekdays and four on weekends. During the night only two GPs are present. In the daytime on Saturday and Sunday, the GP cooperative is staffed with four GPs.

In the integrated out-of-hours care model patients are also stimulated to make a phone call first before attending the cooperative. However, patients are also allowed to attend without an appointment, although this is not preferred and discouraged. At the integrated cooperative telephone triage is performed by doctor's assistants and medical students. In the evenings on weekdays four doctor's assistants or medical students are present. At night on weekdays and weekends there is just one person who performs telephone triage. The number of doctor's assistants and medical students that is present during the daytime and evening on Saturday and Sunday varies between five and six.

Both GP cooperatives have installed management with a director or coordinator. The management of the integrated GP cooperative operates independently of the hospital. Patients contacting these two GP cooperatives can receive three types of consultations; telephone self-care advice, consultation at the GP cooperative, or a home visit. If necessary, patients are referred to the ED. GPs who perform home visits have a car with chauffeur at their disposal.

Costs of both GP cooperatives

Information on costs was gathered from the annual accounts of the year 2003 of the two GP cooperatives involved in this study. Costs have been divided in five categories: personnel, GPs' salary, accommodation, coordination and organisation, and other costs (including transportation, interest, cleaning, computers, communication, and overhead). Total costs per capita were calculated by dividing the total sum of costs by the number of inhabitants in the GP cooperative's coverage area. This was also repeated for the five costs categories.

Primary care utilisation during out-of-hours

Information on use of primary care during out-of-hours at both GP cooperatives was collected from the annual reports. Per type of consultation, i.e. telephone advice, consultation at the GP cooperative, or home visit, number of patient contacts were registered.

Cost calculation of emergency department

To study the effect of an integrated GP cooperative on costs of an ED, we assessed the costs of the ED of the University Hospital Maastricht. For this matter, the annual accounts of 1999 and 2000 were used (a year before and a year after the reorganisation of out-of-hours primary care). We did not assess the costs of the ED in the Heerlen region. During the years this study was conducted, two of the three former EDs in this region were closed. This will have caused considerable bias, which would make it impossible to assess changes in costs related to the set up of the separated cooperative without the interference of the closing of EDs.

Table 1. Annual costs of an integrated GP cooperative and a separated GP cooperative in 2003.

	Integrated model 2003		Separated model 2003	
	Total	Per capita *(n = 190,000)*	Total	Per capita *(n = 285,000)*
Personnel / management	€ 761,484	€ 4.01	€ 1,025,561	€ 3.60
GPs' salary	€ 840,740	€ 4.42	€ 1,287,311	€ 4.52
Accommodation	€ 105,893	€ 0.56	€ 129,011	€ 0.45
Coordination and organisation	€ 71,970	€ 0.38	€ 122,754	€ 0.43
Other	€ 399,480	€ 2.10	€ 440,250	€ 1.54
Total	€ 2,179,567	€ 11.47	€ 3,004,987	€ 10.54

RESULTS

The total costs of out-of-hours primary care in the separated GP cooperative have been found to be € 3.0 million. In the integrated cooperative this was € 2.2 million. In the separated model the costs of out-of-hours primary care are € 10.54 per capita per year and in the integrated model € 11.47 per capita per year. This difference is mainly the result of a difference in costs of personnel and 'other' costs per capita (Table 1). In the integrated cooperative the costs for personnel are € 4.01 per capita, while in the separated cooperative these costs are € 3.60 per capita. The category 'other' (including transportation, interest, cleaning, computers, communication, and overhead) in the integrated cooperative costs € 2.10 per capita, and € 1.54 in the separated cooperative. The costs of the GP salary are practically the same for both cooperatives; € 4.42 per capita in the

integrated model, and € 4.52 per capita in the separated model. In total, about 75% of the costs of both GP cooperatives are based on personnel (including GPs' salary).

Table 2. Utilisation of out-of-hours primary care in 2003.

	Integrated GP cooperative 2003		Separated GP cooperative 2003	
	n (%)	n/1000/year*	n (%)	n/1000/year*
Telephone consultation	13187 (24.0%)	69	27399 (36.0%)	96
Consultation at GP cooperative	36438 (66.3%)	192	39207 (51.5%)	138
Home visit	5350 (9.7%)	28	9466 (12.4%)	33
Total	54975 (100%)	289	76072 (100%)	267

* Number of patient contacts per thousand inhabitants per year.

Table 3. Costs of the hospital emergency department before and after the establishment of the integrated GP cooperative.

	1999 (before)	2000 (after)	Difference
Personnel[a]	€ 1,250,611	€ 1,250,611	€ 0
Administration	€ 25,996	€ 22,770	- € 3,226
Communication	€ 7,453	€ 8,405	+ € 952
Interior	€ 3,078	€ 2,408	- € 670
Medication, bandages, casts, etc	€ 200,675	€ 185,624	- € 15,051
Diagnostics	€ 725,135	€ 726,400	+ € 1,265
Overhead[b]	€ 1,380,774	€ 1,380,774	€ 0
Other	14,107	14,254	+ € 147
Total	€ 3,607,830	€ 3,591,247	- € 16,582

[a] Staffing of the ED remained unchanged; therefore, costs have been kept the same.
[b] Overhead costs have been kept the same for both years

In total, about fifty-five thousand patient contacts were registered in 2003 with the integrated GP cooperative. The separated GP cooperative registered approximately seventy-six thousand patient contacts during out-of-hours (Table 2). This implies that the integrated GP cooperative (289 contacts / 1000 inhabitants / year) has about 8% more patient contacts compared with the separated GP cooperative (267 contacts / 1000 inhabitants / year). Over 66% of all contacts with the integrated GP cooperative consist of patients attending the GP cooperative for a consultation. In the separated GP cooperative about half of all contacts consist of consultations at the GP cooperative. Relatively more patients receive telephone advice in the separated model (36%) than in the

integrated model (24%). Approximately 10% of all patient contacts at the integrated cooperative were home visits, which was not very different from that of the separated cooperative, where about 12% of all contacts were home visits.

The total costs of the ED in the integrated system, before the GP cooperative was established, were € 3.6 million (Table 3). In the year after the integrated GP cooperative was set up, the costs were slightly reduced (minus € 16,582) but remained around the € 3.6 million. The reduction was mainly caused by a reduction in costs related to the use of medication, bandages, plaster casts, and splints. These costs decreased from € 200,675 to € 185,624.

DISCUSSION

The results of this study show that the primary care cooperative integrated with the ED is slightly more expensive, but has relatively more patient contacts, compared with the GP cooperative separate from the hospital EDs. There was no substantial change in costs of the ED at the integrated system after the GP cooperative had been set up, mainly because the organisation of the ED had not been changed despite the reduction of patient contacts.

The main category of costs of the GP cooperatives is that of personnel (doctor's assistants, management, and GPs), which is responsible for over three quarters of all costs. These costs could be in some way dependent on the model of out-of-hours primary care; differences in organisation may have specific effects on utilisation of out-of-hours primary care. As a consequence, staffing of the cooperative may have to be adjusted resulting from different demands. However, the costs for GPs are the same for both cooperatives; even slightly higher in the separated system. In contrast, costs of personnel (management, administration, and doctor's assistance) have been found to be higher in the integrated GP cooperative. However, this is probably the result of the scale advantage of the separated cooperative; the region covered by the separated cooperative is much larger than that of the integrated cooperative. Because costs like management, administration, but also accommodation have a less strong relationship with the size of the area, as compared to staffing of doctor's assistants and GPs, they will be relatively lower in a cooperative covering a larger area. Therefore, it seems that costs of out-of-hours care are more dominated by the size of the population the GP cooperative covers than the organisational structure of out-of-hours care, i.e. integrated versus separated. In this study we found

that approximately 8% more patients attended the integrated GP cooperative compared with the separated GP cooperative. In that case, it is reasonable to suggest that the higher expenses (9% higher) of the integrated cooperative are justified by the fact that at this GP cooperative generally more patients are seen.

With respect to the ED of the integrated model no changes occurred in costs after the GP cooperative had been set up. Unfortunately we have not been able to use costs of the EDs in the separated setting to compare with the potential change we analysed in the integrated ED setting. Nevertheless, the before – after analysis we used provided a good indication of whether costs of this ED have changed over time. Because staffing of the ED remained unchanged, despite the substantial decrease of number of patients that utilised hospital emergency care[5], the costs of this department did not change. Staffing of the ED before and after the establishment of the GP cooperative did not change due to hospital regulations that prescribe a sufficient staffing in case of major traumata. Although costs of the ED remained the same, the regional Health Insurance Fund has cut the hospital's annual budget with approximately € 1.36 million. This budget reduction was mainly based on the fact that fewer patients attended the ED after the GP cooperative had been set up. For every patient attending the ED, the costs of a so-called first administrative consult (FAC) are reimbursed by the Health Insurance Company. Because fewer patients attended the ED, fewer FACs could be reimbursed, and consequently the hospital's budget was reduced.

Considering the utilisation of primary care in both settings, it is reasonable to suggest that the integrated primary care GP cooperative is equally cost efficient as the separated GP cooperative. After all, the higher costs (9% more) of the integrated GP cooperative are compensated by the larger number of patients (8% more) utilising out-of-hours primary care at the integrated GP cooperative. However, the ED at the integrated system has become less cost efficient because they see fewer patients at the same costs. For that matter, it would seem wise to consider keeping staff, like nurses, doctor's assistants, and management, no longer separated in an integrated model.

Obviously, preference with either one of these two organisational models for out-of-hours care should not only be based on costs. Patient satisfaction and preferences with either one of these two systems should also be accounted for, but also the opinions of GPs should be considered. GPs also have to be satisfied with the organisation of out-of-hours care. First, because quality of care may be reduced in case of dissatisfied staff [8]. But second, because GPs have a strong saying in how out-of-hours care should be organised. Now that we have some indication that costs of out-

of-hours primary care are only moderately dependent on the organisational structure, one could say that patients and GPs opinions, and other quality of care aspects should prevail in the decision of out-of-hours care organisation of preference. Nevertheless, from a financial point of view, based on the savings that occurred because the hospital's budget was reduced with 1.36 million because of decreased utilisation of ED care, the integrated out-of-hours care system should be preferred.

In conclusion, the costs of out-of-hours primary care appear to be more dependent on the size of the population the cooperatives cover than on the way the GP cooperative is organised, i.e. separated versus integrated. In addition, locating the GP cooperative at the same site as the ED was found to have little effect on costs of the ED. Nevertheless, savings have occurred at the side of the Health Insurance Funds, which may prove to be beneficial to the community.

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Chapter 5

General practitioners' satisfaction with and attitudes to out-of-hours services.

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ABSTRACT

Background: In recent years, Dutch general practitioner (GP) out-of-hours service has been reorganised into large-scale GP cooperatives. Until now little is known about GPs' experiences with working at these cooperatives for out-of-hours care. The purpose of this study is to gain insight into GPs' satisfaction with working at GP cooperatives for out-of-hours care in separated and integrated cooperatives.

Setting: A GP cooperative separate from the hospital Accident and Emergency (A&E) department, and a GP cooperative integrated within the A&E department of another hospital. Both cooperatives are situated in adjacent geographic regions in the South of the Netherlands.

Methods: One hundred GPs were interviewed by telephone; fifty GPs working at the separated GP cooperative and fifty GPs from the integrated GP cooperative. Opinions on different aspects of GP cooperatives for out-of-hours care were measured, and regression analysis was performed to investigate if these could be related to GP satisfaction with out-of-hours care organisation.

Results: GPs from the separated model were more satisfied with the organisation of out-of-hours care than GPs from the integrated model (70 vs. 60 on a scale score from 0 to 100; $P = 0.020$). Satisfaction about out-of-hours care organisation was related to opinions on workload, guarantee of gatekeeper function, and attitude towards out-of-hours care as being an essential part of general practice. Cooperation with medical specialists was much more appreciated at the integrated model (77 vs. 48; $P < 0.001$) versus the separated model.

Conclusions: GPs in this study appear to be generally satisfied with the organisation of GP cooperatives for out-of-hours care. Furthermore, GPs working at the separated cooperative seem to be more satisfied compared to GPs working at the integrated cooperative.

INTRODUCTION

During the last decade, out-of-hours care by general practitioners (GP) in the Netherlands has changed substantially. Formerly, GPs performed out-of-hours care in small locum groups in which they joined a rota system. In recent years, large GP cooperatives have been set up following British and Danish examples [1, 2]. Currently, about 124 GP cooperatives are operational in the Netherlands, taking care of more than 90% of the Dutch population during out-of-hours.

In the current Dutch out-of-hours primary care, roughly two types of organisation models can be distinguished; a separated model and an integrated model. In the separated model the GP cooperative is located separate from the hospital's accident and emergency (A&E) department, indicating that there is no functional integration of out-of-hours services. In this model patients with a medical problem can choose between attending the GP cooperative or the A&E department, during out-of-hours. In the second organisation model the GP cooperative is integrated with the hospital A&E department. In this model, all patients utilising out-of-hours primary and emergency care without referral are first seen by a GP or practice nurse. It is known that a substantial number of self-referred patients at the A&E department exhibit minor injuries or non-urgent ailments that can be treated by a GP [3, 4]. As a consequence, GPs of the integrated model will generally have to handle more patients than GPs at the separated model [5]. Patients with a referral or brought in by ambulance always bypass this system and will be directed to the emergency department without interference of the GP on call.

The initiative of the out-of-hours primary care reorganisation has come mainly from the medical profession itself, motivated by increased dissatisfaction with the former out-of-hours services. However, as indicated by a recently published systematic review, there is little evidence available on current GPs' satisfaction with out-of-hours services [6]. The authors of this review identified only one study with respect to GPs' satisfaction with out-of-hours care. That study showed high levels of satisfaction with cooperative based primary care services [7]. However, only a part of the GPs interviewed actually participated within this service. Other studies have reported of beneficial effects to GPs with the introduction of GP cooperatives for out-of-hours care, like improved GPs' health [8] or decreased levels of stress [9]. We have also identified one Dutch study that showed increased satisfaction after reorganising out-of-hours care from practice based to cooperative based [10]. No further information is available on GPs' satisfaction with cooperative based out-of-hours care.

There were two important reasons to conduct this study. First, because GP satisfaction has been shown to be an important contributor to quality of care [11]. GP satisfaction, besides patient satisfaction and costs, should be taken into account when evaluating out-of-hours care services. Second, during the time of the study, the integrated GP cooperative was still in its trial period and insight had to be gained in experiences and opinions of GPs working at this cooperative to support the decision whether this way of organising out-of-hours care should be continued.

The purpose of this study is to gain insight in the satisfaction of GPs with out-of-hours primary care organised in cooperatives. In addition, this study investigates potential differences in the relationship of satisfaction and other out-of-hours care related opinions between GPs working in an integrated model and GPs working in a separated model.

METHODS

This study investigates two specific elements: GPs' satisfaction with the organisation of two types out-of-hours care and the GPs' opinions related to working at either of two GP cooperatives. Two differently organised out-of-hours cooperatives are involved; a separated model and an integrated out-of-hours care model in two adjacent geographic regions in the Netherlands.

Setting

The separated cooperative is located in the centre of the city of Heerlen, the Netherlands, about 5 km and 9 km away from the only two A&E departments in this region. This cooperative was first set up in 1999, and covered at that time a population of approximately 100,000. In 2001, more GPs joined the cooperative and the population was increased to 278,000. The number of participating GPs increased to 120. In this system patients are stimulated to make a phone call before attending the GP cooperative. This allows the GP cooperative to triage patients at urgency levels of their medical complaints in order to prioritise treatment. During out-of-hours, patients with a medical problem can choose which out-of-hours service to attend, i.e. the GP cooperative or the hospital A&E department.

The integrated GP cooperative is located in the city of Maastricht, the Netherlands, at the region's only A&E department of the University Hospital Maastricht. This cooperative was set up in January 2000. During the first one and half year, this cooperative covered only the population of the city of Maastricht (approximately 120,000). In August 2001, the

surrounding area of Maastricht also joined the cooperative, increasing the coverage area to 190,000 inhabitants. In total, 83 GPs participate in the integrated GP cooperative. At this GP cooperative patients are allowed to attend the cooperative without an appointment, although it is preferred that they make a phone call first. All patients attending the integrated out-of-hours care facility without referral are first seen by a GP, who refers, if necessary, the patient to the A&E department.

At both GP cooperatives, telephone triage is performed by doctor's assistants who are supported by guidelines and protocols, and are supervised by a GP. GPs of these cooperatives perform telephone consultations, consultations at the cooperative, and home visits. Regarding home visits a chauffeured care is at their disposal. Both regions comprise rural as well as urban areas.

Development of the questionnaire

Topics relevant to out-of-hours primary care were identified in interviews with three GPs participating in the two GP cooperatives under study. We have developed a set of items to enable us to measure and test multi-item scales. The items are related to relevant themes with respect to working at a GP cooperative. In total the questionnaire consisted of 86 items. (Some items are excluded from the analysis because they are only of local interest.) We investigated opinions on: overall satisfaction with the GP cooperative for out-of-hours, reorganisation of out-of-hours care, perceived workload, out-of-hours care as being an essential part of primary care, anonymity of care, gatekeeper function, availability of patient dossiers, cooperation with medical specialists during out-of-hours, and safety. We used a Likert five point scale (strongly agree, agree, neutral, disagree, strongly disagree) to record responses.

Sample

In both GP cooperatives (separated and integrated) a random sample of 50 GPs was taken. In case one of these GPs was not able or refused to participate, we had a substitution list of 25 GPs for each cooperative. This list was a random sample of the remaining GPs who were not selected by the first sampling.

The questionnaire was administered by telephone to ensure high response rates. Two research assistants administered the questionnaire and received instructions, prior to the study, by FN. The study was conducted from November 2001 to February 2002.

Statistics

Beforehand, the 86 items of the questionnaire were divided into four blocks. These blocks represented 'satisfaction with out-of-hours care organisation', 'perceptions and subjective evaluations on working conditions in the present organisation', 'opinions and beliefs on professional philosophy', and 'evaluation of the cooperation with medical specialists at the local hospital'. The most important block concerns the one in which satisfaction with out-of-hours care organisation was measured: this was operationalised with 12 items. Principal component analysis with oblimin rotation was performed on the items of this block and after removal of items with weak factor loadings (lower than |0.60|) and/or ambiguously loading items (on more than one factor) two factors remained in analysis. Four items measured satisfaction with the current cooperative and three items measured satisfaction with the state of affairs before the cooperative was set up (out-of-hours care in a rota system). Next, per intended scale the test stability of each factor was measured by Cronbach's alpha, and again items could be removed from this scale, if this did increase the value of the alpha coefficient. Next, scale constructions were performed under specific rules for missing item data: in summating to a total for each case scores had to be valid on at least half of the items, if the number of items was even, and on at least half of the items plus one half, if the number of items was uneven. Otherwise, scale scores were set to 'missing'. Finally, a transformation of the total scale score to a 0-100 score was made [12]. After that, the remaining three blocks were analysed in a similar way. In total this procedure produced ten scales.

The relationship between individual scales and overall satisfaction was analysed using multiple regression analysis. In case of missing data, listwise deletion of missing cases was applied. To test differences between GPs from either two GP cooperatives we performed independent Student's t-tests per scale. A *P*-level of less than 0.05, was considered to be statistically significant. All data were analysed using SPSS-pc, version 10.0.5.

RESULTS

In total 100 GPs participated; 50 GPs per each cooperative. One respondent of the Maastricht GP cooperative (integrated model) refused to participate and was substituted by a GP from the reserve list. The mean duration of the interviews was 22 (±6.6) minutes. The characteristics of the respondents of both models do not differ statistically (Table 1).

Table 1. Characteristics of respondents.

		GP cooperative Heerlen (n=50)	GP cooperative Maastricht (n=50)
Age		48.0 ±7.5	47.3 ±6.6
Gender	Male	42	43
	Female	8	7
Employed	Part-time	11	16
	Fulltime	39	34
Size of practice (GPs)	Mean (range)	2.5 (1 – 6)	2.0 (1 – 7)
Participation in GP cooperative	Fully	37	37
	Partly	13	13

Table 2. Scales scores for GPs opinions on different aspects of out-of-hours primary care.

	Separated Model (Heerlen)	Integrated Model (Maastricht)	
Scale	Scale score Mean (95% CI)	Scale score Mean (95% CI)	Sign.
Overall satisfaction	70.0 (64.0 – 76.0)	60.0 (54.0 – 66.0)	0.020
Current out-of-hours care is better organised than formerly [b,†]	90.1 (84.7 – 95.5)	89.5 (83.7 – 95.3)	0.569**
Experience a high workload [b]	63.4 (58.1 – 68.8)	67.6 (62.5 – 72.7)	0.256
Out-of-hours care is an essential part of primary care [b]	52.9 (43.7 – 62.1)	67.8 (59.4 – 76.1)	0.018
Anonymity of care is a problem [b]	31.8 (25.1 – 38.4)	34.0 (28.3 – 39.7)	0.609
Gatekeeper function is well guaranteed [b,†,‡]	66.8 (62.2 – 71.2)	62.2 (57.1 – 67.3)	0.180
Availability of patient dossiers is important [b]	55.4 (48.4 – 62.4)	59.3 (52.6 – 66.0)	0.422
Cooperation with specialists is good [b,†]	48.5 (42.1 – 54.8)	76.6 (72.9 – 80.4)	<0.001
One feels safe at the cooperative [b]	76.5 (71.1 – 81.9)	77.3 (72.0 – 82.7)	0.825
One feels safe during home visits [b,‡]	74.8 (68.7 – 81.0)	77.2 (73.1 – 81.4)	0.532

* Scale score ranges from 0 to 100 points

[b] 100 points represents strong agreement

† One case missing at the separated model, ‡ one case missing at the integrated model

** Because of non-normal distribution, the Mann-Whitney test was used

We tested ten scales related to aspects of current out-of-hours primary care (Table 2.). Internal reliability of these scales was considered appropriate; Cronbach's alpha's ranging from 0.74 to 0.97. An overview of all scales and related items is presented in Appendix 1 (see page 68).

GPs' overall satisfaction score with the current organisation of out-of-hours care was 65 points (95%CI: 60.7 – 69.3) on a scale from 0 (absolutely not satisfied) to 100 (highly satisfied). However, GPs from the separated model were more satisfied compared to their colleagues of the integrated model (scale score 70.0 vs. 60.0; $P = 0.020$). GPs from both cooperatives reported that the new organisation of out-of-hours primary care is better compared to the former practice-based out-of-hours care (mean scale score 89.8). Most GPs experience a high workload (mean scale score 65.5). A minority of all interviewed GPs think that the anonymity of patient care - many patients are not known to the GP because care is organised on large-scale - endangers adequacy of out-of-hours primary care (mean scale score 32.9). Furthermore, a small majority feels that the patient's medical file should be available at the cooperative (mean scale score 57.4). In both cooperative models (integrated and separated) of out-of-hours care, GPs think that their gatekeeper's role to secondary care is sufficiently guaranteed (mean scale score 64.0). Most GPs feel relatively safe at the cooperative or during out-of-hours home visits (mean scale score 76.9 and 76.0 respectively).

Table 3. Regression analysis with overall satisfaction with the organisation of out-of-hours care as dependent variable (0 = not satisfied, 100 = very satisfied) (n = 98; R^2 = 0.36).

	Unstandardised coefficient		Standardised coefficient		
Scales	B	SD	Beta	t	Sign.
Constant	106.352	22.154		4.801	
Age	-0.034	0.262	-0.012	-0.130	0.897
Gender [b]	-2.188	5.228	-0.037	-0.418	0.677
Cooperative [a]	-75.980	26.073	-1.840	-2.914	(0.005)
Gatekeeper function	0.101	0.149	0.081	0.677	(0.500)
Out-of-hours care is an essential part of primary care	-0.140	0.063	-0.212	-2.216	0.029 [c]
Experienced workload	-0.597	0.152	-0.518	-3.915	(< 0.001)
Gatekeeper * cooperative	0.737	0.247	1.253	2.980	0.004 [c]
Workload * cooperative	0.487	0.219	0.799	2.225	0.029 [c]

[a] Cooperative: Maastricht = 0; Heerlen = 1; [b] gender: male = 0, female = 1
[c] Only effects that are interpretable
Gatekeeper function (0 = not guaranteed, 100 = highly guaranteed)
Out-of-hours an essential part (0 = not essential, 100 = highly essential)
Experienced workload (0 = very low, 100 = very high)

GPs from the separated model were neutral about out-of-hours care as being an essential part of their job as a GP, in contrast with the integrated model GPs who were more convinced that out-of-hours care is an important part of their job (scale score 52.9 vs. 67.8; $P = 0.018$). GPs at the integrated model experience a better cooperation with medical specialists during out-of-hours care (scale score 76.6 vs. 48.5; $P < 0.001$).

The regression analysis identified three scales that are significantly related to overall satisfaction (Table 3.). Effects on satisfaction for two of these scales, experienced workload and whether the GP thinks that his gatekeeper function is well guaranteed during out-of-hours, are different for both cooperatives. Experienced workload is mainly related to overall satisfaction of GPs from the integrated model. Whereas, the GP's opinion about the gatekeeper function is mainly related to overall satisfaction of GPs from the separated model. Increased experienced workload will lead to a decreased overall satisfaction, and the better the GPs valued the guarantee of their gatekeeper function during out-of-hours the higher their overall satisfaction will be.

Table 4. Regression analysis results on overall satisfaction with the organisation of out-of-hours care as dependent variable for both GP cooperatives separately (0 = not satisfied, 100 = very satisfied).

	Unstandardised coefficient		Standardised coefficient		
	B	SD	Beta	t	Sign.
Separate GP cooperative (R^2 = 0.35) n=49					
Constant	21.823	20.437		1.068	0.291
Age	-0.122	0.366	-0.043	-0.333	0.741
Gender [a]	-0.110	7.475	-0.002	-0.015	0.988
Gatekeeper function	0.956	0.201	0.697	4.755	<0.001
Out-of-hours care is an essential part of primary care	-0.182	0.098	-0.273	-1.851	0.071
Integrated GP cooperative (R^2 = 0.28) n=50					
Constant	101.692	23.204		4.383	<0.001
Age	0.073	0.398	0.023	0.182	0.856
Gender [a]	-9.375	7.335	-0.156	-1.278	0.208
Experienced workload	-0.648	0.144	-0.551	-4.496	<0.001

[a] Gender: male = 0, female = 1
Gatekeeper function (0 = not guaranteed, 100 = highly guaranteed)
Out-of-hours an essential part (0 = not essential, 100 = highly essential)
Experienced workload (0 = very low, 100 = very high)

The third scale that is significantly related to overall satisfaction is the GP's opinion about out-of-hours care as being an essential part of his task as a GP. GPs who indicated that they believed that out-of-hours care was an essential part of their job as a primary care physician had a lower overall satisfaction with respect to current out-of-hours care. Neither gender nor age was significantly related to overall satisfaction. The regression model explained 36% of the variation in overall satisfaction.

Subgroup regression analysis for GPs of the integrated and separated model separately (see Table 4), showed that for the GPs of the integrated model workload was the main factor that influenced overall satisfaction (variance explained: 34%). With respect to the GPs of the separated model, the guarantee of the gatekeeper function was of great importance to the overall satisfaction (variance explained: 35%).

DISCUSSION

GPs in this study are generally satisfied with the way out-of-hours primary care is currently organised. However, GPs from the separated cooperative are more satisfied than GPs working at the integrated cooperative. Mainly three factors are related to overall satisfaction. These are: experienced workload, guarantee of the gatekeeper function, and attitude towards out-of-hours care as being an essential part in general practice.

To our best knowledge, this is the first study to investigate GPs' satisfaction with out-of-hours care as organised in separated and integrated primary care cooperatives. One British study and one Dutch study have looked into GPs satisfaction with out-of-hours care[7, 10]. However, these studies solely focused on separated out-of-hours care models. The Dutch study showed that 70% of the GPs were satisfied with cooperative based out-of-hours care [10], and the British study found that 92% of the GPs were satisfied with the way out-of-hours care was arranged [7]. Since these studies used different ways to measure satisfaction it is difficult to compare them with our results.

The results of this study indicate a difference in satisfaction between GPs from the separated and integrated cooperative. A possible explanation for this difference could be the fact that the integrated cooperative has to deal with a larger number of patients compared to the separated cooperative [5]. In this study however, experienced workload of GPs from the integrated cooperative did not differ from that of the GPs of the separated one. Obviously workload is also dependent on staffing of the cooperative. We presume that the difference in satisfaction might well be explained by other

factors, which we have not investigated in this study. At the time of the study the integrated model was still in its experimental phase; housing in the integrated cooperative was generally not considered to be optimal. In this phase of the experiment the waiting room was very small and quickly overcrowded. Also, the space in the doctor's offices was quite limited and contained only room for one bed and no desk. In addition, at this time also patients' and GPs' privacy were not as sufficiently guaranteed as in the separated model. These factors may have had an effect on GPs' overall satisfaction with out-of-hours services.

Three opinions were found to be significantly related to GP satisfaction with the organisation of out-of-hours care. The two opinions that weighted most heavily on satisfaction were experienced workload and gatekeeper function.

We found that the GPs' opinion on the gatekeeper function during out-of-hours was related to satisfaction with the organisation of out-of-hours care specifically for GPs of the separated GP cooperative. The fact that this opinion is not related to satisfaction with the organisation in the integrated cooperative is probably due to the fact that this is not an issue at this cooperative, because the GP's gatekeeper function is fully guaranteed; all patients entering the out-of-hours centre are screened by a GP and if necessary referred to a medical specialist. In the separated model however, the patient can still bypass the GP and attend the emergency department of the hospital without a GP's referral. GPs who feel to have too little grip on these self-referring patients appear to be less satisfied with their arrangements of out-of-hours care.

We have not been able to investigate GPs' satisfaction prior to the reorganisation from practice based out-of-hours care to cooperative based out-of-hours care, whilst GPs' dissatisfaction with practice based out-of-hours care was one of the important reasons why primary care in the Netherlands was reorganised. Nevertheless, this study shows that GPs feel that current out-of-hours primary care is better organised compared to former practice-based out-of-hours care. These results are in line with previous research [10]. However, this is not surprising considering the effort that has gone into reorganising the out-of-hours services and the prior dissatisfaction. All those who were in favour of the change of the out-of-hours system will obviously be satisfied with the fact that out-of-hours care has been reorganised, and feel that the new system is better than formerly.

A distinct feature of the integrated model is the close cooperation between primary and hospital emergency care. This offers possibilities to improve communication and to exchange expertise. This is reflected by the high satisfaction score of GPs from the integrated model with the cooperation with the medical specialists of the hospital. Because GPs and

medical specialists now work at the same site, it is easier to consult each other. Furthermore, GPs who have referred a patient to one of the medical specialists have access to feedback, i.e. they can check on the patient a few minutes later to see if they were right in their diagnosis. Nevertheless, region-specific differences may also have accounted for this difference, because in the region with the integrated cooperative there is a longer tradition in cooperation between primary and secondary care.

We investigated GPs' opinions on working at two contrasting models of out-of-hours primary care, i.e. a separated and an integrated GP cooperative, in order to gain insight in GPs' preferences for either one of these models. Until November 2001, the Maastricht GP cooperative for out-of-hours care was the only cooperative in the Netherlands that was integrated with a hospital A&E department. Consequently, the Maastricht out-of-hours care organisation was the only service at the time of the study that could be used as an example of integrated out-of-hours care.

There are limitations to generalise the results of the study to other regions. First, results of the study reflect the opinions of GPs at only two cooperatives in the South of the Netherlands. Second, the integrated GP cooperative was still in its trial phase and may therefore have not been a good representative of a well-established GP cooperative. Nevertheless, this is the first study to address GP satisfaction with an integrated GP cooperative and may therefore, despite the limited generalisability, give some indication of relevant aspects of integrated out-of-hours care for further research and care development.

Currently, three regions in the Netherlands are working according to an integrated out-of-hours care system. However, at the moment GPs in other regions consider adopting this organisational structure. Furthermore, the current Dutch minister of health care has stated to be in favour of an intensive collaboration between primary and emergency care, for this will probably reduce costs [13]. The results of this study can support the current discussion in the Netherlands on the organisation of out-of-hours primary care.

Future research should focus on the economic efficiency of both models and patient preference with respect to the organisation of out-of-hours primary care, because these are important features to take into account when developing out-of-hours care.

In conclusion, GPs seem to be generally satisfied with out-of-hours primary care organised in GP cooperatives.

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Appendix 1. GP questionnaire. Description of scales and items. (Original items are in Dutch*)

Scale 1. Overall satisfaction with GP cooperative (Cronbach's α = 0.90; mean (SD) = 65.0 (21.6))
I am very satisfied about the functioning and the structure of the GP cooperative (+)
I am pleased with the current GP cooperative (+)
I am very satisfied with the current organisation of out-of-hours primary care (+)

Scale 2. Current out-of-hours care is better organised than formerly (Cronbach's α = 0.92; mean (SD) = 89.8 (19.5))
Out-of-hours care was better organised before the set up of GP cooperatives (+)
I prefer the former organisation of out-of-hours primary care (-)
The current organisation of out-of-hours care is not an improvement compared to the former organisation (-)

Scale 3. Experienced a high workload (Cronbach's α = 0.87; mean (SD) = 65.5 (18.4))
The workload at the GP cooperative is too high (+)
Out-of-hours care during daytime on Saturday and Sunday is very aggravating (+)
Usually, out-of-hours service is much too aggravating (+)
I do not experience such a high workload at the GP cooperative (-)
Performing out-of-hours care is absolutely not aggravating (-)
Out-of-hours care during daytime in the weekends is not too high (-)

Scale 4. Out-of-hours care is an essential part of primary care (Cronbach's α = 0.97; mean (SD) = 60.3 (31.7))
These days, out-of-hours care should no longer be an essential part of primary care (-)
Out-of-hours care is definitely an essential part of primary care (+)
Out-of-hours care should always be a part of general practice (+)
There is no place anymore for out-of-hours care in general practice (-)

Scale 5. Anonymity of care is a problem (Cronbach's α = 0.90; mean (SD) = 32.9 (21.8))
Because the GP of the cooperative and the patient are not familiar with each other, there is a risk for inadequate treatment (+)
Because of anonymity of care there is a risk that diagnostics and treatment are not adequately adjusted for the patient's needs (+)
One of the big disadvantages of the GP cooperative is the anonymity of care, because the GP is not familiar with the patient (+)
Because the GP of the cooperative and the patient are not familiar with each other, there is a risk for inadequacy of care (+)

* The provisional translation into English is meant to inform the reader of the content of the scales and cannot be seen as a definite one.

Appendix 1. (continued). GP questionnaire. Description of scales and items.

Scale 6. Gatekeeper function is well guaranteed (Cronbach's α = 0.74; mean (SD) = 64.5 (16.8))
I think the GP gatekeeper function at the GP cooperative is well guaranteed (+)
I am afraid that the GP gatekeeper function during out-of-hours will disappear (-)
I believe that in the near future the GP gatekeeper function will be put under too much pressure (-)
I think the GP gatekeeper function at the GP cooperative is well protected (+)

Scale 7. Availability of patient dossiers is important (Cronbach's α = 0.93; mean (SD) = 57.4 (24.1))
As far as I am concerned, I do not need the availability of my colleagues' patient dossiers (-)
I think it is a serious problem that my colleagues' patient dossiers are not at my disposal (+)
The availability of patient dossiers of the other participating GPs during out-of-hours is absolutely unnecessary (-)
During out-of-hours I am hindered in my practice, because of lack of information about my colleagues' patients (+)

Scale 8. Cooperation with medical specialists is good (Cronbach's α = 0.94; mean (SD) = 62.7 (23.0))
Sometimes, the cooperation between GPs and medical specialists is not so good (-)
I think that during out-of-hours the understanding between GPs and medical specialists is sometimes pretty bad (-)
I think that during out-of-hours the cooperation between GPs and medical specialists is always fine (+)
Generally, the cooperation between myself and the medical specialists of the hospital is good (+)

Scale 9. One feels safe at the cooperative (Cronbach's α = 0.87; mean (SD) = 76.9 (18.7))
Sometimes, I feel unsafe at the GP cooperative during out-of-hours (-)
During my shifts at the GP cooperative, I never feel unsafe (+)
Regularly, I feel unsafe at the GP cooperative during out-of-hours (-)

Scale 10. One feels safe during home visits (Cronbach's α = 0.84; mean (SD) = 76.0 (18.4))
Regularly, I feel unsafe when performing home visits during out-of-hours (-)
Sometimes, I feel unsafe when performing home visits during out-of-hours (-)
Usually, I feel safe when performing home visits during out-of-hours (+)

* The provisional translation into English is meant to inform the reader of the content of the scales and cannot be seen as a definite one.

Chapter 6

Does setting up out-of-hours primary care cooperatives outside a hospital reduce demand for emergency care?

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ABSTRACT

Objective: To investigate whether the reorganisation of out-of-hours primary care, from practice rotas to GP cooperatives, changed utilisation of primary and hospital emergency care.

Methods: During a four-week period before and a four-week period after the reorganization of out-of-hours primary care in a region in the South of the Netherlands all patient contacts with general practitioners and hospital accident and emergency (A&E) departments were analysed.

Results: We observed a 10% increase in patient contacts with out-of-hours primary care, and a 9% decrease in patient contacts with out-of-hours emergency care. The number of self-referrals at the A&E department was reduced by approximately 4%.

Conclusions: The reorganisation of out-of-hours primary care has led to a shift in patient contacts from hospital emergency care to primary care.

INTRODUCTION

The organisation of out-of-hours primary care in the Netherlands has changed substantially during the last decade. Formerly, general practitioners (GPs) provided out-of-hours care to their patients in small groups of GPs (6 to 8 GPs), utilising a rota system. In recent years, large GP cooperatives have been set up following British and Danish examples [1, 2]. Generally, 40 to 120 GPs participate in these services, providing care for populations ranging from 80 000 to 300 000. Currently, GP cooperatives in the Netherlands cover over 90% of the population.

There has been debate on how the establishment of these cooperatives influences utilisation of emergency care services by patients with non-urgent health problems, i.e., problems that are not life threatening and do not require immediate care [3]. In the Dutch healthcare system the GP acts as a gatekeeper to secondary care. As a rule, patients need a GP's referral to utilise hospital services. However, to attend an emergency department a referral is recommended but not strictly required. Research shows that over 40% of all patients attending the emergency department present with non-urgent problems that can be managed in general practice[4]. Non-urgent patients have been recognised to be one of the main contributors to the problem of overcrowding at the emergency department[5].

In the Netherlands most cooperatives are situated separately from the local hospital's emergency department. Based on patient interviews, Coleman et al.[6] suggested that alternative facilities have little effect on the use of emergency services by patients with non-urgent problems. However, no data are available to support this assumption. In an earlier study we have shown that GPs working at a cooperative within the A&E department handle relatively more patients as compared to their colleagues in a cooperative separate from the A&E department. In addition, this integrated organisation reduced the number of self-referrals at the A&E department[7]. Still, it remains unclear to what extent cooperatives separate from the A&E department have an effect on emergency services utilisation. The organisation and positioning of GP cooperatives has mainly been the result of local preferences.

The objective of this study is to gain insight into the impact of GP cooperatives on the use of hospital emergency services and primary care during out-of-hours.

METHODS

This study was conducted in the South of the Netherlands in the province of Limburg, a region with about 400 000 inhabitants, of whom approximately 70% live in rural areas. The area's size is about 840 km^2, with roughly 190 houses per square kilometer. In this region, 173 GPs are registered. Until September 2001, out-of-hours primary care was organised in 24 small practice rotas. At that point in time, out-of-hours care was reorganised and three large GP cooperatives were created. All cooperatives are located near, but function fully independently of, the only three hospital's emergency departments. The public was informed about the out-of-hours care reorganisation by posters at their own GP's practice and by the GPs' answering services.

Out-of-hours are defined as between 5pm and 8am on working days and from 5pm Friday to 8am Monday.

During a four-week period in May and June 2001 (before the reorganisation) and during the same period in 2002 (after the reorganisation) we investigated all patient contacts with out-of-hours primary and emergency care. During the first assessment period there were two bank holidays; during the second period there was one bank holiday. To improve comparability between these two periods, we excluded all patient contacts from 8am to 5pm on one of the two bank holidays during the first assessment period. In the 2001 study period, GPs in this region were asked to register all patient contacts when they were on call. With respect to patient contacts with emergency care, contacts between 8am and 5 pm were excluded.

In the registration period in 2002 we extracted the data from the GP cooperatives' computer system. Data from the emergency departments were extracted from the hospitals' computer systems.

Eighty-three percent (143/173) of all GPs participated during the first assessment period. To estimate total number of patient contacts with out-of-hours primary care during this period, a correction factor was applied to all absolute numbers; absolute numbers were divided by the number of participating GPs and multiplied by the total number of GPs working in that area.

Chi-square tests were used to test for relative changes. The level of significance was set at 0.05.

Table 1. Number of patient contacts with out-of-hours care during the two four-week assessments before and after the reorganisation (2001 numbers adjusted for GP participation).

	Before (2001)	After (2002)	Absolute change
	n (% (95%CI))	n (% (95%CI))	n (%)
Primary Care	8496 (72.1 (71.3-72.9))	9326 (75.7 (74.9-76.5))	+ 830 (9.8%)
Emergency Care	3285 (27.9 (27.1-28.7))	2993 (24.3 (23.5-25.1))	- 292 (8.9%)
Total	11 781	12 319	+ 538 (4.6%)

RESULTS

The total number of patient contacts during out-of-hours increased by 4.6% (see Table 1). Before the reorganisation (2001) the GPs registered 7023 patient contacts during out-of-hours. Adjusted for the GP response rate, the total number of patients for that period was estimated to be 8496. In the year after the reorganisation of out-of-hours primary care (2002) there were 9326 patient contacts with the three GP cooperatives, an increase of 9.8%.

Before the reorganisation the emergency departments of the three hospitals registered 5454 patient contacts, of which 3285 (60.2%) were during out-of-hours. After the reorganisation the total number of patient contact with these A&E departments was found to be 5062 with 2993 (59.1%) contacts during out-of-hours. This indicates a decreased demand for emergency care during normal hours of 8.2% and a decrease during out-of-hours of 8.9%.

In 2001, 47.6% (2598/5454) of all patients at the emergency departments during and outside office hours were self-referred, whereas after the reorganisation 44.3% (2242/5062) of the patients were self-referred; a relative reduction of 3.3% ($P < 0.001$; 95%CI: -5.2 - -1.4). The absolute reduction in the number of self-referrals was 13.7% (356/2598).

During out-of-hours, there was a 3.6% shift ($P < 0.001$) from patients utilising emergency care to primary care ($P < 0.001$; 95% CI: 2.5 – 4.7).

DISCUSSION

Although the total demand for out-of-hours care has increased, we observed a decreased demand for emergency care after the reorganisation of primary care out-of-hours care in the study region. It seems likely that the reduction of the utilisation of emergency care has mainly been caused by a

reduction in self-referred patients with non-urgent problems. As a consequence, more patients are being managed by the GPs, due to increased overall demand and the shift of primary care patients from the A&E department to the GP cooperatives. As more information becomes available to the public about how and when to use out-of-hours medical services, we expect the current shift to grow. Since the second assessment was performed shortly after the reorganisation, the public was probably not accustomed to this model of healthcare delivery; thus, the reorganisation's full effect on out-of-hours medical care may not be fully appreciated.

It is likely that the number of patient contacts with primary care before the reorganisation has been slightly underestimated, as GPs may not have registered all patient contacts during out-of-hours. If this is the case, the overall increased utilisation of out-of-hours care may be somewhat smaller. However, our conclusion on the decreased use of emergency care remains unaffected.

Although not investigated in this study, the shift in patient contacts from emergency care to primary care is likely to reduce costs[3, 8].

Future research is warranted to investigate the cost of these out-of-hours services, quality of care, and satisfaction with these services of patients and care providers.

In conclusion, the reorganisation of out-of-hours primary care into GP cooperatives has reduced utilisation of hospital emergency care and increased utilisation of primary care.

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Chapter 7

Patient satisfaction with out-of-hours primary care in the Netherlands

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ABSTRACT

Background: In recent years out-of-hours primary care in the Netherlands has changed from practice-based to large-scale cooperatives. The purpose of this study is to determine patient satisfaction with current out-of-hours care organised in general practitioner (GP) cooperatives, and gain insight in factors associated with this satisfaction.

Methods: From March to June 2003, 2805 questionnaires were sent to patients within three weeks after they had contacted the GP cooperative in their region. The study was conducted in the province of Limburg in the South of the Netherlands. One-third of these questionnaires was sent to patients who had only received telephone advice, one-third to patients who attended the GP cooperative for consultation, and one-third to patients who received a home visit. Four weeks after the first reminder, a non-respondents telephone interview was performed among a random sample of 100 patients. Analyses were performed with respect to the type of consultation.

Results: The total response was 42.4% (1160/2733). Sixty-seven percent of patients who received telephone advice only reported to be satisfied with out-of-hours care. About 80% of patients who went to the GP cooperative for consultation or those receiving a home visit, reported to be satisfied. Factors that were strongly associated with overall satisfaction included, the doctor's assistant's attitude on the phone, opinion on GP's treatment, and waiting time.

Conclusion: Patients seem generally satisfied with out-of-hours primary care as organised in GP cooperatives. However, patients who received telephone advice only are less satisfied compared to those who attended the GP cooperative or those who received a home visit.

INTRODUCTION

In recent years, out-of-hours primary care in the Netherlands has been substantially reorganised. Formerly, general practitioners (GPs) used to perform these services in small locum groups (6 to 8 GPs) in which they joined a rota system. Nowadays, out-of-hours care is organised in large-scaled GP cooperatives (45 to 120 GPs) following examples in the UK and Denmark [1, 2].

The initiative of reorganising out-of-hours care has come mainly from the profession itself, motivated by increased dissatisfaction with the organisation of former out-of-hours primary care services. This dissatisfaction was mainly due to the high perceived workload (after out-of-hours service a regular day of work followed), and poor separation between work and private life. The main advantage of the reorganisation was the substantial reduction of number of hours a GP has to be on call. Furthermore, the organisation of out-of-hours care became much more professional by installing management, employing doctor's assistants, and using chauffeured cars. Studies have indicated that GPs appear to be generally satisfied with out-of-hours care organised in cooperatives[3].

Not only did things change for doctors, but also patients experienced some important changes in out-of-hours primary care. Generally, the reorganisation caused a shift from more personal care to more anonymous care, with increased distance to the GP. Formerly, when patients needed primary care outside office hours, the probability of being seen by their own or a local GP with whom they were familiar, was higher. In addition, when patients contacted the GP during out-of-hours in the past, they were most likely to speak to the GP himself on the phone. Nowadays, the phone is staffed by a doctor's assistant who decides what action should follow the patient's call. Moreover, out-of-hours care used to be delivered by local GPs, indicating short distances to the GP's practice. In large-scale GP cooperatives, the distance to a GP outside office hours will have increased substantially for most patients.

We expected that patient satisfaction would have been reduced after the reorganisation, because factors that guaranteed personal out-of-hours care at a short distance, that may be important to patients, were changed substantially. Furthermore, in Denmark it has been shown that after the out-of-hours primary care reform patient satisfaction dropped significantly[4, 5].

Patient satisfaction with out-of-hours primary care has quite often been investigated, especially in the UK[4-11]. Mostly, comparisons have been made between different types of out-of-hours services. Several of these studies focused on out-of-hours primary care as organised in GP cooperatives.

These studies have shown that patients are generally satisfied with out-of-hours primary care organised in GP cooperatives[5, 8, 9, 11]. Nevertheless, patients receiving telephone advice only, appear to be less satisfied compared to those attending the cooperative or those receiving a home visit. In addition, it has been shown that the patient's expectation about their contact with the GP cooperative strongly affects the patient's overall satisfaction with out-of-hours care[12]. Other variables that appear to be related to overall satisfaction are, access to a car, age, and waiting time[8].

Insight in patient satisfaction with out-of-hours care supplies the health care provider with important information on the patient's perception of the quality of that care. During the last years, Dutch GP cooperatives have often received negative publicity in newspapers. The reorganisation has had some important implications for patients, and therefore research on their opinions about current out-of-hours care is warranted. The purpose of this study is to determine patient satisfaction with current out-of-hours care, and to determine how satisfaction is related to different aspects of the patient's contact with a GP cooperative.

METHODS

Setting

The study was conducted in the province of Limburg in the South of the Netherlands. With respect to out-of-hours primary care, the province is organisationally divided in five regions. Two of these regions each have two GP cooperatives (NL and ML), one region (OZL) has one GP cooperative with two satellite centres, and in the other two regions (WM and MH) only one GP cooperative is operational. All cooperatives but one (MH) are organisationally separate from the emergency department of the local hospital, and are located nearby the hospital. This implies that patients may choose between attending the emergency department and the GP cooperative for medical problems during out-of-hours. The MH cooperative is located at the emergency department of the region's only hospital and sees all patients needing out-of-hours care, except for those having a referral for emergency care.

In total, these seven GP cooperatives cover a population of about 1.1 million people (the total Dutch population is over 16 million people), and are fully operational since the 1st of September 2001.

Development of the questionnaire

To determine relevant issues for the questionnaire we interviewed GPs and managers involved with out-of-hours primary care. In addition, we analysed the process for a patient contacting the GP cooperative for all three loci of care (telephone advice, consultation at the cooperative, and home visits) separately to make sure that all facets of the GP cooperative a patient faces would be incorporated in the questionnaire. Moreover, we also analysed unpublished Dutch questionnaires in this field, and the patient satisfaction questionnaire developed by McKinley et al. [13].Based on these three analyses, we identified a number of relevant elements (initial scales). Next a set of items was developed to enable us to produce multi-item scales. Subsequently, this list was sent to the patient organisation in our province, the two largest health insurance funds, and to the five GP cooperative organisations for commentary. These organisations were asked to critically review the list of items, and to add or remove items if they considered it necessary. After receiving all commentary the questionnaire was adjusted and was submitted to five people not involved in the development but with experience with out-of-hours primary care to check for clarity of the questions.

Finally three questionnaires were constructed for each of the three types of consultations (telephone advice, consultation at the cooperative, and home visit). The three questionnaires differed on items related to the specific type of contact, but general items were the same for all three questionnaires. In this way it was possible to avoid complex skip sections which lengthen the questionnaire and can reduce the response rate. We used a balanced Likert five point scale (strongly agree, agree, neutral, disagree, strongly disagree) to record responses.

The questionnaire related to telephone advice contained six initial scales measuring: accessibility of the cooperative by phone, doctor's assistant's attitude, questions asked by the assistant, advice given by the assistant, urgency of patient's complaint, and overall satisfaction.

The questionnaire related to consultations at the cooperative contained ten initial scales: accessibility of the cooperative by phone, doctor's assistant's attitude, questions asked by the assistant, urgency of patient's complaint, waiting time at the cooperative, waiting room, distance to the cooperative, GP's attitude, treatment by GP, and overall satisfaction.

The questionnaire related to home visits contained eight initial scales: accessibility of the cooperative by phone, doctor's assistant's attitude, questions asked by the assistant, urgency of patient's complaint, waiting time until GP arrives, GP's attitude, treatment by GP, and overall satisfaction.

In addition, patient characteristics such as, age, gender, level of education, and health insurance (as a measure of social economic status) were recorded. Patients were also asked which type of consultation they expected prior to their contact with the GP cooperative, and whether they thought that the right diagnosis had been made.

Sample

From March to June 2003 a sample of 2805 patients – who had contacted the GP cooperative in their region – received a questionnaire by mail. Patients received this questionnaire within three weeks after they had contacted the GP cooperative. Sampling was performed per GP cooperative within the four-month period. With respect to patients who received telephone advice only and those who attended the GP cooperative, a computer program randomly selected each fourth patient contact with the GP cooperative backwards from the moment of sampling. Since the number of home visits is limited, all 150 patients, who were visited by a GP from the cooperative, prior to the moment of sampling received a questionnaire. These procedures assured that the time between receiving the questionnaire and the contact with the GP cooperative was not more than three weeks.

Per region 450 questionnaires were sent out; 150 to patients who received only telephone advice, 150 to patients who visited the GP cooperative, and 150 to patients who received a home visit. Because of parallel research, more questionnaires were sent out in one of the regions (WM): 1005 questionnaires equally distributed among the three types of patient contact with the GP cooperative. The study size was chosen based on previous research by McKinley et al.[7, 13], who presented a study sample of about 1400 patients. We estimated that about half of all questionnaires would be returned, and therefore distributed 2805 questionnaires.

The study was approved by the Institutional Medical Ethics Board.

Reminder and non-respondents interview

Three to four weeks after the questionnaire had been distributed, a reminder was sent to patients who had not returned the questionnaire, with the exception of the WM area. Four weeks after the last reminder, a random sample of 100 patients who had not responded, was contacted by phone. They were asked about their reasons not to return the questionnaire, and about their opinion on the contact they had with the GP cooperative. This interview was performed during office hours, during a three-week period.

Statistics

Principal components analysis with oblimin rotation was used to test whether the items could be assumed to measure similar aspects or components of patients' opinions about their contact with the GP cooperative. Next, Cronbach's alpha coefficient was calculated to estimate the internal consistency as a measure for reliability for each component. Finally, scale scores were calculated per component by summing the scores per item and expressing the total result as a percentage of the maximum score for each scale[13, 14]. Scale scores could range between 0 and 100.

The relationship between individual variables and overall satisfaction was analysed using multiple regression analysis, with subscale satisfaction scores as covariates. Variables that did not significantly contribute to the regression model were excluded from the final model. In case of missing data, listwise deletion of missing cases was applied. All data were analysed using SPSS-pc, version 10.0.5.

Table 1. Patient characteristics.

	Telephone advice n (%)	Consultation at the GP cooperative n (%)	Home visit n (%)
Response	366/908 (40.3)	392/912 (43.0)	402/903 (44.5)
Age			
0 – 20 years	127 (35.5)	146 (39.0)	9 (2.3)
21 – 40 years	96 (26.8)	81 (21.7)	26 (6.6)
41 – 60 years	67 (18.7)	82 (21.9)	93 (23.8)
> 60 years	68 (19.0)	65 (17.4)	263 (67.3)
Total	*358 (100)*	*374 (100)*	*391 (100)*
Gender			
Male	148 (42.3)	159 (48.5)	177 (46.0)
Female	202 (57.7)	169 (51.5)	208 (54.0)
Total	*350 (100)*	*328 (100)*	*385 (100)*
Level of education			
Low	92 (27.2)	91 (25.0)	161 (46.4)
Middle	164 (48.5)	188 (51.6)	131 (37.8)
High	82 (24.3)	85 (23.4)	55 (15.8)
Total	*338 (100)*	*364 (100)*	*347 (100)*
Health insurance			
Public	268 (74.4)	283 (73.5)	314 (80.5)
Private	92 (25.6)	102 (26.5)	76 (19.5)
Total	360 (100)	385 (100)	390 (100)

RESULTS

Patient characteristics

Seventy-two of the 2805 questionnaires were excluded, either because they could not be delivered (patient had moved or gave a wrong address), the patient had died, or the patient was sent a double questionnaire (multiple contacts). Eventually the response was 42.4% (1160/2733). Generally more women responded to the questionnaire, and about three-quarter of the respondents had public health insurance (table 1). The age of respondents of those who received telephone advice only was comparable with those who attended the GP cooperative for a consultation. The respondents who received a home visit were generally older; two-third was over sixty years of age.

Telephone advice

Forty percent (366/908) of the patients who had received telephone advice only, returned the questionnaire. 67% of these patients responded to be satisfied (44.3%) or very satisfied (22.3%) with their contact with the GP cooperative, and 57% thought that the current out-of-hours care was an improvement compared to the former situation. We identified the same six scales that were initially set to represent patients' opinions on aspects of primary out-of-hours care (table 2). All six scales had Cronbach's alpha coefficients between 0.64 and 0.93. Detailed information on the scales and items can be found in appendix 1 (page 94).

Overall satisfaction in this group was significantly related to five scales, with a variance explained of 62% (see table 3.). When patients judged that the right diagnosis had been made overall satisfaction was higher. We found that satisfaction also increased with age. When patients were satisfied with the accessibility of the cooperative by phone, the doctor's assistant's attitude on the phone, and the doctor's assistant's advice overall satisfaction was higher.

Consultation at the GP cooperative

Forty-three percent (392/912) of the patients who attended the GP cooperative returned the questionnaire. Approximately 80% of these patients reported to be satisfied (54.6%) or very satisfied (26.3%) with their contact with the GP cooperative, and 61% thought that the current out-of-hours care was an improvement compared to the former situation. We

Table 2. Description of scales representing patients' opinion on different aspects of out-of-hours primary care.

Scales [a]	Cases n	Cronbach's alpha	Scale score Mean ±SD (95%CI)
Telephone advice			
Accessibility by phone	364	0.72	76.5 ±18.9 (74.6-78.5)
Doctor's assistant's attitude	363	0.91	72.8 ±22.1 (70.5-75.1)
Questions asked by assistant	361	0.64	58.6 ±25.4 (56.0-61.3)
Advice given by assistant	351	0.93	53.7 ±27.3 (50.8-56.5)
Urgency of complaint	363	0.86	69.1 ±24.5 (66.6-71.7)
Overall satisfaction	361	0.93	64.2 ±26.1 (61.5-66.9)
Consultation at the GP cooperative			
Accessibility by phone	385	0.73	79.3 ±17.6 (77.5-81.1)
Doctor's assistant's attitude	386	0.88	79.8 ±16.3 (78.2-81.4)
Questions asked by assistant	384	0.65	63.5 ±23.0 (61.2-65.8)
Urgency of complaint	384	0.79	72.0 ±21.5 (69.8-74.1)
Waiting time at cooperative	387	0.62	61.5 ±25.8 (58.9-64.1)
Waiting room	381	0.60	65.6 ±20.3 (63.5-67.6)
Distance to cooperative	388	0.75	66.7 ±21.2 (64.5-68.8)
Treatment by GP	377	0.93	81.0 ±18.9 (79.1-82.9)
Overall satisfaction	392	0.88	73.7 ±19.8 (71.7-75.6)
Home visit			
Accessibility by phone	391	0.86	80.9 ±18.4 (79.1-82.7)
Doctor's assistant's attitude	393	0.90	80.6 ±18.6 (78.7-82.4)
Questions asked by assistant	383	0.73	59.2 ±26.6 (56.5-61.9)
Urgency of complaint	383	0.78	86.7 ±16.0 (85.1-88.3)
Treatment by GP	380	0.96	84.4 ±19.7 (82.4-86.4)
Waiting time until GP arrives	369	-	60.0 ±30.7 (56.8-63.1)
Overall satisfaction	390	0.92	74.6 ±22.4 (72.4-76.9)

[a] Scale scores range from 0 to 100, where 0 represents very dissatisfied and 100 represents highly satisfied.

identified nine scales that represent patients' opinions on aspects of primary out-of-hours care (table 2), with Cronbach's alpha coefficients between 0.62 and 0.93. Two initial scales have been merged into one scale; these were patient's opinion on the GP's attitude and the treatment by the GP. All other identified scales were the same as the initial scales. Detailed information on the scales and items can be found in appendix 1 (page 94).

Seven variables proved to be predictors of overall satisfaction, with a variance explained of 51% (see table 4.). Patients, who expected prior to their contact with the cooperative that they were going to be asked to come to the GP cooperative, were generally more satisfied. Those who believed

Table 3. Regression analysis with overall satisfaction with out-of-hours primary care as dependent variable of patients who received only telephone advice (adjusted R^2 = 0.615).

	Unstandardised coefficients		Standardised coefficients		
	B	SE	Beta	t	Sign.
Constant	-2.404	4.302		-0.559	
Diagnosis (1=right, 0=wrong)	12.345	2.644	0.200	4.668	< 0.001
Patient's age	0.077	0.036	0.076	2.128	0.034
Accessibility by phone [a]	0.155	0.054	0.112	2.859	0.005
Doctor's assistant's attitude [a]	0.401	0.067	0.355	5.960	< 0.001
Doctor's assistant's advice [a]	0.267	0.055	0.282	4.840	< 0.001

Variables that did not significantly contribute to the regression model: Patient's gender, type of health insurance, level of education, expectation about type of consultation, patient's perceived urgency of his or her complaint, and opinion on the questions asked by the doctor's assistant.
a Scale score ranges from 0 to 100, where 0 represents very dissatisfied and 100 represents highly satisfied.

Table 4. Regression analysis with overall satisfaction with out-of-hours primary care as dependent variable of patients who went for consultation to the GP cooperative. (adjusted R^2 = 0.501).

	Unstandardised coefficients		Standardised coefficients		
	B	SE	Beta	t	Sign.
(Constant)	-5.249	5.187		-1.012	
Expectation about contact *	4.313	2.113	0.078	2.042	0.042
Accessibility by phone [a]	0.095	0.047	0.088	2.022	0.044
Doctor's assistant's attitude [a]	0.165	0.055	0.138	2.981	0.003
Urgency own complaint [b]	-0.072	0.036	-0.078	-2.008	0.045
Waiting time [a]	0.181	0.030	0.241	6.059	< 0.001
Distance to cooperative [a]	0.176	0.035	0.192	4.965	< 0.001
GP's treatment [a]	0.454	0.042	0.441	10.756	< 0.001

Variables that did not significantly contribute to the regression model: Patient's age and gender, type of health insurance, level of education, diagnosis (1=right, 0=wrong), and opinion on the questions asked by the doctor's assistant.
a Scale score ranges from 0 to 100, where 0 represents very dissatisfied and 100 represents highly satisfied.
b Scale ranges from 0 to 100: 0 represents not urgent and 100 represents very urgent according to the patient.
* Indicates whether the patient received the type of contact (telephone advice, consultation at the cooperative, or home visit) he or she expected (1= in accordance with expectation, 0=not in accordance with expectation)

that their medical problem was urgent were less satisfied. Long waiting times and dissatisfaction with the distance to the cooperative also reduced overall satisfaction. When patients were satisfied with the accessibility of the cooperative by phone, the doctor's assistant's attitude on the phone, and the GP's treatment overall satisfaction was higher.

Table 5. Regression analysis with overall satisfaction with out-of-hours primary care as dependent variable of patients who received a home visit from a GP from the cooperative. (adjusted $R^2 = 0.506$).

	Unstandardised coefficients		Standardised coefficients		
	B	SE	Beta	t	Sign.
(Constant)	-11.650	5.213		-2.235	
Diagnosis (1=right, 0=wrong)	11.948	2.461	0.207	4.856	< 0.001
Accessibility by phone [a]	0.232	0.059	0.198	3.946	< 0.001
Doctor's assistant's attitude [a]	0.329	0.061	0.282	5.364	< 0.001
GP's treatment [a]	0.260	0.050	0.233	5.155	< 0.001
Waiting time until GP arrives*, [a]	0.154	0.030	0.218	5.183	< 0.001

Variables that did not significantly contribute to the regression model: Patient's age and gender, type of health insurance, education level, expectation about type of consultation, urgency of own complaint, and opinion on the questions asked by the doctor's assistant.

[a] Scale score ranges from 0 to 100, where 0 represents very dissatisfied and 100 represents highly satisfied.

* Single item scale

Home visits

Almost forty-five percent (402/903) of the patients that received a home visit by a GP from the cooperative returned the questionnaire. About 81% of these patients reported to be satisfied (42.8%) or very satisfied (38.8%) with their contact with the GP cooperative, and 61% thought that the current out-of-hours care was an improvement compared to the former situation. We identified six multi-item scales that represented the patient's opinion on different aspects of out-of-hours primary care, with Cronbach's alpha coefficients between 0.73 and 0.96. Two initial scales have been merged into one scale; these were patient's opinion on the GP's attitude and the treatment by the GP. All other identified scales were the same as the initial scales. Detailed information on the scales and items can be found in appendix 1 (page 94).

We found that five variables predicted overall satisfaction, with a variance explained of 51% (see table 5.). Similar to the group of patients

who had received telephone advice only, patients who receive a home visit were generally more satisfied when they believed that the GP of the cooperative had made the right diagnosis. When patients were satisfied with the accessibility of the cooperative by phone, the doctor's assistant's attitude on the phone, and the GP's treatment overall satisfaction was higher. In addition, when patients were satisfied about the waiting time until the GP arrives, overall satisfaction increased.

Overall satisfaction

The means of the three loci of care, adjusted for age, sex, insurance status, and education level, show that there is no difference between overall satisfaction in the group of patients who visited the GP cooperative (75.1 ±1.31) and those who received a home visit (72.5 ±1.37) (Table 6). However, patients who received telephone advice only (66.2 ±1.30), were significantly less satisfied compared to the other two groups of patients.

Table 6. Adjusted means for overall satisfaction.

	Mean	SD	95% CI
Telephone advice	66.2	1.30	63.6 – 68.7
Consultation at GP cooperative	75.1	1.31	72.5 – 77.6
Home visit	72.5	1.37	69.8 – 75.2

[a] adjusted for age, sex, insurance status, and level of education.

Non-response

Out of 100 randomly selected patients, who had not returned the questionnaire, we were able to reach 63 by phone. Of these 63 non-respondents 35 (55.6%) were male and 28 (44.4%) were female. Many of them reported that they had forgotten to return the questionnaire (40%). A minority said not to be interested (6.7%) or did not find it needful (6.7%). Most non-respondents (46.7%) gave other reasons like, no time, too difficult, or had lost the questionnaire.

Of these patients, about 71% reported to be satisfied or very satisfied about their contact with the GP cooperative.

DISCUSSION

The results of this study indicate that patients were generally satisfied about their contact with the GP cooperative. Patients who received

telephone advice only, however, were less satisfied compared to those who attended the GP cooperative and those who received a home visit. A small majority believes that current out-of-hours care is an improvement compared to the former situation.

The response rate in our study is not as high as presented previously by others who investigated patient satisfaction with out-of-hours primary care[5, 7-9, 11]. Reasons for patients not to return the questionnaire in our study were assessed through the non-respondents interview. We found that most patients gave reasons that were not directly related to their contact with the GP cooperative. Therefore, we assume that this reduced response rate may have had little effect on the outcome of our study. In addition, the overall satisfaction in the non-respondents group did not differ much from that of the respondents.

In the process of determining relevant aspects of out-of-hours care to patients, we consulted the province patient organisation and studied discussions on out-of-hours care in newspapers. We have not used patient interviews, although this might have identified other relevant domains of out-of-hours care. However, we think that the current questionnaire captures many relevant domains of out-of-hours care to patients as well as to health professionals.

Based on results of a Danish study [4, 5], we expected overall patient satisfaction to be low because our study took place relatively shortly after out-of-hours care had been reorganised. However, we have not assessed patient satisfaction before the reorganisation, and therefore it remains unclear whether satisfaction has changed. Nevertheless, this study showed that more than half of the patients believe that the reorganisation has improved out-of-hours primary care.

We have no reason to believe that the results of this study cannot be generalised to other regions in the Netherlands. Most GP cooperatives in the Netherlands are comparable, with respect to organisation and population size, to those in this study. In addition, the region in our study includes both rural and urban areas. Despite the similarities with out-of-hours primary care in other countries such as Ireland, the UK and Denmark, there are also differences with respect to the way these cooperatives are organised, and therefore care should be taken when generalising these results to other countries.

We identified various factors that are closely related to overall satisfaction. These factors give important insight in aspects of the GP cooperative that really matter in the patient's opinion on out-of-hours care. The patient's opinion on the doctor's assistant's attitude on the phone proved to be the strongest predictor of overall satisfaction with respect to those having received telephone advice and those that received a home visit.

Also for those attending the GP cooperative, this factor was a relatively strong predictor; in this group the patient's satisfaction with the GP's treatment was by far the strongest predictor of overall satisfaction. Thus, it appears that the patients' impression of the first contact they have with the cooperative, which is mostly through telephone, strongly influences overall satisfaction.

In accordance with other studies we found that patients who received telephone advice only, are generally less satisfied with the out-of-hours service, compared to those attending the GP cooperative and those receiving a home visit[4, 5, 8, 9, 11]. Patient's expectation of care is assumed to be an important factor that influences overall satisfaction[12]. In our study, only 35% of the patients with telephone advice expected that they would receive this type of consultation. In contrast, 85% of the patients that were asked to attend the cooperative or received a home visit found this type of consultation in line with their expectations. This difference in expectation of care may very well explain the difference in overall satisfaction.

It is questionable whether extra information to the public on the process of the telephone triage process will adjust patients' expectations. Similar to what Salisbury et al.[8] suggested, we believe that a shift to an out-of-hours care organisation based predominantly on telephone advice may decrease patient overall satisfaction. Therefore, proper information about the telephone procedure at the GP cooperative is desirable[15]. This information can be supplied by the doctor's assistant on the phone, and by written information through folders and posters in GP practices.

CONCLUSIONS

This study has shown that patients are generally satisfied with out-of-hours care, but that patients with telephone advice only are less satisfied than those attending the cooperative or receiving a home visit. The patient's opinion on several aspects of out-of-hours care can predict overall satisfaction, with different predictors regarding the three types of consultations. However, the accessibility by phone and the doctor's assistant's attitude on the phone are always significantly related to overall satisfaction, regardless of the type of consultation. This implies that when trying to improve overall satisfaction one should always focus on at least these two factors. The questionnaire used in this study has potential for use as a standardised instrument for assessing satisfaction with out-of-hours care in The Netherlands for either research or service monitoring.

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Appendix 1. Patient satisfaction questionnaire. Description of scales and items. (Original items are in Dutch*)

Scale 1. Accessibility by phone[t,c,v]
It was easy to find the phone number of the GP cooperative# (+)
It was easy to get through on the telephone (+)
The time until the doctor's assistant picked up the phone was short (+)

Scale 2. Doctor's assistant's attitude[t,c,v]
The doctor's assistant was friendly on the phone (+)
The doctor's assistant had enough time to talk to me on the phone (+)
The doctor's assistant seemed to understand the problem (+)
The doctor's assistant took my problem seriously (+)
The information given by the doctor's assistant was very clear (+)

Scale 3. Questions asked by the doctor's assistant[t,c,v]
The doctor's assistant asked too many questions (-)
I thought it was annoying that the doctor's assistant started with noting my personal data before asking about my complaints (-)

Scale 4. Urgency of complaint[t,c,v]
I believed my problem was very severe (+)
I thought my problem needed immediate care (+)

Scale 5. Advice given by doctor's assistant[t]
The doctor's assistant's information about my problem was good (+)
The advice the doctor's assistant gave me was very useful (+)
The telephone advice by the doctor's assistant had reassured me (+)
The telephone advice by the doctor's assistant was sufficient considering my problem (+)
I thought the doctor's assistant was right to give me telephone advice only (+)

Scale 6. Waiting time at the cooperative[c]
I thought I had to wait too long at the registration desk (-)
I thought I had to wait too long before the GP came to see me (-)

Scale 7. Waiting room[c]
There was enough material (magazines et cetera) in the waiting room to entertain the patients (+)
The waiting room looked very clean (+)

Scale 8. Distance to the GP cooperative[c]
I think the travel time from my house to the GP cooperative is too long (-)
The GP cooperative is easy accessible (+)

* The provisional translation into English is meant to inform the reader of the content of the scales and cannot be seen as a definite one.

Appendix 1. (continued) Patient satisfaction questionnaire. Description of scales and items. (Original items are in Dutch*)

Scale 9. Treatment by the GP[c,v]
The GP took my problem seriously (+)
The GP was friendly (+)
The GP gave me clear information about my problem (+)
The advice the GP gave me was very useful (+)
The GP had enough time for me during the consultation (+)
I was very pleased with the treatment by the GP (+)

Scale 10. Waiting time until GP arrives[v]
I thought it took too long for the GP to arrive (-)

Scale 11. Overall satisfaction[t,c,v]
I am satisfied about this contact with the GP cooperative (+)
I am satisfied about the time it took to help me (+)
I think the GP cooperative functions very well (+)

Satisfaction rating on a scale from 1 to 10 regarding the functioning of the GP cooperative[‡]
Satisfaction rating on a scale from 1 to 10 regarding the telephone procedure at the GP cooperative[‡,*]

* The provisional translation into English is meant to inform the reader of the content of the scales and cannot be seen as a definite one.
[t] scale for the patients group who received telephone advice only
[c] scale for the patients group who attended the GP cooperative for a consultation
[v] scale for the patients group who received a home visit
[*] this item was excluded from the scale related to patients who attended the GP cooperative
[#] this item was excluded from the scale related to patients who received a home visit
[‡] these items have been divided by two to reach the same range as the other items.

Chapter 8

Telephone triage during out-of-hours primary care: patients' and doctors' opinions.

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ABSTRACT

Objective: The purpose of this study is to gain insight in patients' and general practitioners' (GP) opinions on telephone triage with and without computer based decision support software (the Telephone Advice System (TAS)) at GP cooperatives for out-of-hours primary care.

Methods: Patients and GPs of two GP cooperatives were sent a questionnaire in which they were asked about their opinions on aspects of telephone triage. At one GP cooperative the doctor's assistants performing telephone triage use TAS, and at the other GP cooperative the telephone triage process is supported by written protocols and guidelines.

Results: Patients who contacted the cooperative that uses TAS were generally more satisfied about the telephone advice, but less satisfied about the accessibility of the GP cooperative by phone. GPs of the cooperative that uses TAS were more satisfied about their role as telephone GP, but were equally satisfied about the information given by the doctor's assistant to supervise and authorise the handling of the call. GPs of both cooperatives were also equally satisfied about the selection of consultations.

Conclusions: The use of TAS seems to increase patient satisfaction with telephone advice. However, according to GPs' opinions, the selection of consultations at the cooperative that uses TAS is equal to that of the GP cooperative that uses written protocols and guidelines to support the telephone triage process.

INTRODUCTION

Currently, out-of-hours primary care in the Netherlands is organised in large-scale general practitioner (GP) cooperatives. This organisational structure of out-of-hours care is comparable to that in countries such as the United Kingdom and Denmark[1]. The GP cooperatives have been set up to provide care outside office hours for populations ranging from 40,000 to 300,000 people. Generally, the number of participating GPs within these cooperatives varies between 20 and 150. In former times, out-of-hours primary care was delivered by small groups of GPs (generally 6 to 8 GPs) who used a rota system to provide care for populations ranging from ten to twenty thousand patients. GPs' dissatisfaction with the former organisation of out-of-hours care was the most important factor to reorganise these out-of-hours services. At the moment, there are more than 120 GP cooperatives in the Netherlands covering over 90% of the Dutch population.

The GP cooperatives in the Netherlands use telephone triage to prioritise patient treatment. During telephone triage the urgency of the patient's problem is assessed and a decision is made about the appropriate action to be taken. This decision includes giving self-care advice without seeing the patient, advising patients to attend their own GP the next day, referring patients to a GP at the cooperative, or ordering home visits. At most Dutch GP cooperatives the telephone is staffed by a doctor's assistant. In addition, this doctor's assistant is supervised by a GP, who can be consulted in case of doubt and who authorises all calls handled by the doctor's assistant.

The telephone triage process is an important and critical link in the chain of out-of-hours primary care. It is essential that patients receive adequate and timely care, and therefore, telephone triage must be safe and effective. At all GP cooperatives in the Netherlands, triage protocols and guidelines are available to support the doctor's assistant. To further support the triage process some GP cooperatives have started using computer based decision support tools. One of these tools which has been introduced in the Netherlands is the Telephone Advice System (TAS). This system was originally developed in the United Kingdom and has been translated and adapted to the Dutch situation. It was found that trained nurses using TAS are capable of independently handling about 50% of the calls, which proved to be safe and effective[2, 3]. Moreover, Dale et al.[3] showed that the decisions taken by nurses were remarkably consistent.

The suggested advantage of telephone triage using TAS above using written protocols and guidelines is the standardisation and structuring of the triage process. It has been shown that during telephone triage without computer based decision software, doctor's assistants start with formulating

a hypothetical diagnosis and then look at symptoms to validate this diagnosis (backward reasoning)[4]. However, it is preferable to start with collecting symptoms and subsequently make a diagnosis based on these symptoms (forward reasoning). Computer based decision software structures this process of telephone triage and supports the process of forward reasoning. It has also been argued that the self-care advice given by the doctor's assistant when using TAS will be more standardised and consistent[3], and the GP who supervises the telephone triage process has more structured and relevant information about the patient's medical problem to authorise and check the handling of the call.

In the Netherlands, the use of TAS at GP cooperatives has not yet been formally evaluated. The use of TAS has been introduced to support safety, adequacy and transparency of telephone triage for patients. However, patient experiences with Dutch GP cooperatives using TAS has not been investigated. As also indicated by a recent review, there is still lack of knowledge about patient satisfaction with telephone triage[5].

To support the quality of the telephone triage process, TAS requires all relevant information about the patient's medical problem to be collected and registered in the computer system. This assumes that the GP who supervises the telephone triage process is given more insight in call handling by the doctor's assistant, compared to the situation where no computer based decision software is used. Moreover, if calls are indeed better selected and more information is available about the triage process, GPs will probably be more comfortable with the supervision of telephone triage and be more satisfied with the selection of consultations at the GP cooperative and home visits.

The purpose of this study was to gain insight in patients' and GPs' experiences with the telephone triage when TAS is used.

METHODS

In this study we compared patients' and GPs' opinions on different aspects of telephone consultation and triage with respect to a GP cooperative using protocols and guidelines to support the triage process (Sittard) with a GP cooperative that uses the Telephone Advice System (Tilburg).

Description of the cooperatives

The GP cooperative in the Sittard region covers a population of about 175,000 patients. The cooperative is located at the site of the region's only

hospital. In total 78 GPs participate within this cooperative, excluding deputy GPs. The staffing of the cooperative varies between two GPs and one doctor's assistant during the night, and four GPs and three doctor's assistants during the weekends. All phone calls are taken by the doctor's assistant, who registers the patient personal details and assesses the urgency of the patient's medical problem and prioritises treatment. Protocols and guidelines are available to support this telephone triage process. There is always one GP present who supervises the telephone triage, the so-called telephone GP. The other GPs working at the cooperative are performing consultations at the GP cooperative, or making home visits in the region.

The GP cooperative in the Tilburg region covers a population of about 250,000 patients. In April 2003 a small cooperative joined the Tilburg region, the GP cooperative of Waalwijk, and the total population increased to 330,000 patients. With respect to patients' opinions, we interviewed patients of the Tilburg and Waalwijk cooperative. With respect to GPs' opinions we interviewed only GPs of the Tilburg cooperative. In Tilburg and Waalwijk respectively, 108 and 40 GPs participate within the cooperative. The Tilburg cooperative is centrally located in the area, however not close to any hospital. The Waalwijk cooperative is located at the local hospital. The staffing of the Tilburg and Waalwijk cooperative varies between three GPs and one doctor's assistant during the night, and six GPs and eight doctor's assistants during the weekends. Comparable to the Sittard GP cooperative, these GP cooperatives have three functions or roles for GPs; telephone triage supervision, consultations at the cooperative, and performing home visits. During telephone triage at the Tilburg cooperative the doctor's assistants are supported by a computerised decision support tool; the Telephone Advice System (TAS).

Patient questionnaire development

Patient opinion on the handling of the phone call was investigated using a postal questionnaire. The development of the questionnaire is described in detail elsewhere[6]. In this study we only analysed patient opinion on aspects that are relevant with respect to telephone triage. These are: accessibility of the GP cooperative by phone, doctor's assistant's attitude, questions asked by the doctor's assistant, advice given by the doctor's assistant, and score for telephone procedure on a ten-point scale. Responses were recorded using a Likert five point scale (strongly agree, agree, neutral, disagree, strongly disagree).

GP questionnaire development

To investigate GPs' opinion on different aspects related to telephone triage, we developed a new questionnaire, because no such questionnaire was available at that time. Relevant topics were identified in interviews with GPs participating in out-of-hours care. We have developed a set of items to enable us to measure and test multi-item scales. In total the questionnaire consisted of 71 items. (Some items are excluded from the analysis because they are only of local interest.) We investigated opinions on: specificity of the triage process (did the patient correctly receive self-care advice or should a doctor have been consulted), appropriateness of patient contacts, the function of telephone GP, how well telephone consultations have been selected, the available information to supervise doctor's assistant's telephone triage, selection of patients attending the cooperative, and selection of home visits.

We used a Likert five point scale (strongly agree, agree, neutral, disagree, strongly disagree) to record responses.

Procedure patient questionnaire

From March to June 2003 questionnaires were sent to patients who contacted the GP cooperative for out-of-hours care. We distributed 1005 questionnaires per GP cooperative, with 335 sent to patients who received telephone advice only, 335 to patients who attended the GP cooperative, and 335 to patients who received a home visit. Patients were randomly selected: backward from the moment of sampling each fourth patient contact with the GP cooperative was selected. Only with respect to patients receiving a home visit each patient contact was selected backward from the moment of sampling until 335 patients were selected. The time between distributing the questionnaire and the patient's contact with the cooperative was no more than 3 weeks.

Procedure GP questionnaire

All GPs of the cooperative without TAS (Sittard) and those of the cooperative with TAS (Tilburg) received a questionnaire by mail. In total 95 questionnaires were distributed to the GPs in Sittard and 108 to GPs of Tilburg. In the Sittard area the questionnaires were distributed in December of 2002, and in Tilburg in June of 2003. Three weeks after questionnaires were distributed, a reminder was sent to those GPs who had not returned the questionnaire.

Statistics

With respect to the patient questionnaire, scales were constructed as described earlier[6]. Regarding the GP questionnaire, principal components analysis with oblimin rotation was used to test whether the items could be assumed to measure similar aspects or components of GP opinions about the different aspects of telephone triage and the GP cooperative. Next, Cronbach's alpha coefficient was calculated to estimate the internal consistency as a measure for reliability for each component. Finally, scale scores were calculated per component by summing the scores per item and expressing the total result as a percentage of the maximum score for each scale[7]. Scale scores could range between 0 and 100. To test differences between patients or GPs from either two GP cooperatives we performed independent Student's t-tests per scale. A *P*-level of less than 0.05 was considered to be statistically significant. All data were analysed using SPSS version 10.0.5.

Table 1. Patient characteristics.

	Telephone advice	Consult at GP cooperative	Home visit
Sittard	n = 109	n = 129	n = 118
Gender			
Male	35 (32.7%)	52 (41.6%)	50 (44.2%)
Female	72 (67.3%)	73 (58.4%)	63 (55.8%)
Age	33.0 (SD 23.9)	32.8 (24.0)	66.1 (16.1)
Insurance			
Public	79 (73.8%)	86 (69.4%)	82 (73.2%)
Private	28 (26.2%)	38 (30.6%)	30 (26.8%)
Tilburg	n = 97	n = 130	n = 133
Gender			
Male	30 (33.7%)	55 (43.7%)	65 (50.8%)
Female	63 (67.7%)	71 (56.3%)	63 (49.2%)
Age	34.8 (23.9)	32.7 (22.5)	63.3 (17.9)
Insurance			
Public	73 (77.7%)	87 (68.0%)	109 (83.8%)
Private	21 (22.3%)	41 (32.0%)	21 (16.2%)

RESULTS

Patient questionnaire

The response to the patient questionnaire did not differ between regions. In Sittard 378 questionnaires were returned, of which 356 (36.2%) were usable. In Tilburg 371 questionnaires were returned and 360 (36.2%) were usable. The patient group who had received telephone advice only, had the

Table 2. Patient's opinions on different aspects of telephone triage.

	Sittard		Tilburg		
	Mean (SD)	95%CI	Mean (SD)	95%CI	Sign
Telephone advice	n = 109		n = 97		
Accessibility by phone	76.3 (20.4)	72.4 – 80.2	68.3 (23.6)	63.5 – 73.1	0.011
Doctor's assistant's attitude	75.6 (20.3)	71.8 – 79.5	77.9 (17.1)	74.4 – 81.4	0.395
Questions asked by the assistant	62.7 (24.9)	58.0 – 67.5	62.5 (23.1)	57.8 – 67.2	0.945
Advice given by assistant	54.9 (25.9)	49.8 – 60.0	62.4 (23.8)	57.5 – 67.2	0.037
Score for telephone procedure[1]	7.0 (1.75)	6.7 – 7.3	6.6 (1.98)	6.2 – 7.0	0.123
Consultation at GP cooperative	n = 129		n = 129		
Accessibility by phone	77.1 (19.8)	73.6 – 80.5	66.9 (22.8)	62.9 – 70.9	< 0.001
Doctor's assistant's attitude	79.1 (17.6)	76.0 – 82.2	78.0 (18.0)	74.9 – 81.2	0.648
Questions asked by the assistant	60.6 (24.9)	56.3 – 65.0	59.8 (25.4)	55.3 – 64.3	0.788
Score for telephone procedure[1]	7.2 (1.8)	6.9 – 7.5	6.4 (2.3)	6.0 – 6.8	0.001
Home visits	n = 116		n = 133		
Accessibility by phone	75.7 (21.8)	71.7 – 79.7	75.3 (21.7)	71.5 – 79.0	0.865
Doctor's assistant's attitude	77.9 (21.2)	74.0 – 81.8	79.3 (15.3)	76.7 – 81.9	0.554
Questions asked by the assistant	62.1 (26.6)	57.1 – 67.0	54.6 (27.3)	49.9 – 59.3	0.034
Score for telephone procedure[1]	7.3 (1.9)	7.0 – 7.7	7.1 (2.0)	6.7 – 7.4	0.295

[*] all scores range from 0 to 100, with 0 indicating very dissatisfied and 100 indicating very satisfied
[1] score for telephone procedure ranges from 1 to 10, with 1 indicating very poor performance and 10 indicating very good performance.

lowest response rate of approximately 31%. The response rates of the other groups of patients ranged between 35% and 40%.

Patient characteristics as presented in Table 1 showed little variation between regions. However, patients who received a home visit appear to be generally older compared to patients who received telephone advice only or who attended the GP cooperative. In general, more women than men contacted the GP cooperatives in both regions.

With respect to patients who received telephone advice only and those who attended the GP cooperative, we found that patients who contacted the Sittard GP cooperative were more satisfied about the accessibility of the cooperative by telephone compared to patients who contacted the Tilburg GP cooperative (with TAS) (Table 2.). Patients receiving telephone advice at the Tilburg GP cooperative, were more satisfied about that advice compared to patients of the Sittard GP cooperative. Patients who attended the Sittard GP cooperative for a consultation were more satisfied about the telephone procedure. Patients who received a home visit of the Sittard GP cooperative were more satisfied about the questions that were asked by the doctor's assistant on the telephone compared to patients of the Tilburg GP cooperative.

GP questionnaire

Of the 95 questionnaires sent to GPs of the Sittard cooperative 77 were returned, of which 74 could be used. Three GPs said to have returned the questionnaire, however, these were not received by the researcher. Consequently, the corrected response rate is 82%. In the Tilburg region, 84 of the 108 questionnaires were returned. One GP said to have returned the questionnaire, which was, however, not received by the researcher. The corrected response rate in this region is 79%.

Characteristics of GPs of the Sittard GP cooperative, with respect to age, gender, and distribution of part-time and fulltime workers, were comparable to that of GPs of the Tilburg cooperative (Table 3.).

Generally, GPs of both cooperatives are equally satisfied about the specificity of triage. This indicates that they do not see many patients at their own practice who received self-care advice during out-of-hours, while they should have been seen by a GP of the GP cooperative (Table 4.). GPs from both cooperatives were equally dissatisfied about the appropriateness of many patient contacts during out-of-hours.

Although satisfaction scores are low for both GP cooperatives, GPs of the Tilburg GP cooperative were more satisfied about their role as telephone GP compared to their colleagues of the Sittard cooperative. Both

Table 3. GP characteristics.

		Sittard	Tilburg
		n = 74 (response: 82%)	n = 84 (response: 79%)
Age		46.7 (SD 7.2)	48.4 (SD 6.8)
Gender	Male	60 (81%)	72 (86%)
	Female	14 (19%)	12 (14%)
Employed	Parttime	14 (19%)	16 (19%)
	Fulltime	59 (81%)	68 (81%)

Table 4. GP's opinions on different aspects related to telephone triage and working at the GP cooperative.

	Sittard		Tilburg		
	Mean (SD)	95%CI	Mean (SD)	95%CI	Sign (*P*)
Specificity of triage	70.1 (17.7)	65.9 - 74.3	70.6 (16.7)	66.9 - 74.2	0.868
Appropriateness of patient contacts	27.0 (17.8)	22.9 - 31.2	27.4 (20.9)	22.8 - 32.0	0.895
Function of telephone GP	47.0 (19.1)	42.5 - 51.4	55.9 (24.1)	50.6 - 61.2	0.012
Information to supervise the doctor's assistant	59.0 (19.9)	54.3 - 63.6	62.7 (16.8)	58.9 - 66.4	0.212
Selection of telephone consultations	57.8 (17.1)	53.8 - 61.7	62.0 (14.9)	58.7 - 65.3	0.099
Selection of consultations at the GP cooperative	50.6 (15.7)	46.9 - 54.2	46.5 (19.5)	42.2 - 50.8	0.158
Selection of home visits	65.9 (21.1)	61.0 - 70.8	67.0 (25.4)	61.5 - 72.5	0.767

* scores range from 0 to 100, with 0 representing very unsatisfied and 100 representing very satisfied about the related scale.

groups of GPs were equally satisfied about the information they received to supervise the telephone triage process.

GPs of the Sittard GP cooperative and the Tilburg GP cooperative were equally satisfied with the selection of telephone consultations, consultations at the GP cooperative, and home visits.

DISCUSSION

This study showed that, regarding the GP cooperative where TAS is used, patients were more satisfied about the telephone advice and less satisfied about waiting times on the phone. GPs of this cooperative were more satisfied about their role as supervisor of the telephone triage and consultation process.

The response rates to the patient questionnaires were relatively low. However, these were low for both cooperatives. Therefore, it is unlikely that this may have caused systematic differences between the study populations of both regions. This assumption is supported by the comparability of patient characteristics of the respondents of both regions. Nevertheless, care should be taken when extrapolating the results to the total population because of possible selection bias.

Patients in our study were more satisfied about the advice given by the assistant at the GP cooperative that uses TAS. Most likely, patients perceived the advice given by the assistant to be of a higher professional standard, because individual items show that the advice has reassured them more, was more helpful, and was found to be sufficient. Although no causal relationship between this finding and the use of TAS can be established, it is reasonable to suggest that the patient opinion on advice is related to the use of standardised advice dictated by TAS. This is in line with previous findings that showed that self-care advice given by doctor's assistants using TAS is more standardised and consistent[3]. Because the use of TAS is more time consuming than telephone triage without computer based decision software, the time per call increases. As a consequence, the Tilburg GP cooperative had to increase the number of personnel performing telephone triage. Considering patient dissatisfaction with the accessibility of the cooperative by phone, this has insufficiently improved waiting times on the phone.

At the cooperative where TAS is used, patients who received a home visit were less satisfied about the number of questions asked during telephone triage. As described before, the triage process with TAS generally takes longer because more questions are being asked. In the eyes of the patient many of these questions may seem inappropriate or unnecessary and the patient just wants the doctor to come as soon as possible. Especially, because most of the time this patient group has severe and urgent problems, and expects a home visit as soon as possible.

The GPs in Tilburg are more satisfied about their function as telephone GP. Analysis of the scale's items (see Table 5) showed that this is not so much caused by experienced workload, but just has to do with whether they enjoy their task as telephone GP. Another factor that may play a role but

which has not been investigated is the GP's confidence in the triage process when TAS is used. However, despite the fact that it is assumed that when using TAS the telephone triage process becomes more transparent and therefore easier to supervise, there is no difference in satisfaction about the information the telephone GP receives about every call to supervise this process.

Surprisingly, we found no differences in GPs' opinions on the selection of telephone consultations, consultations at the GP cooperative, and home visits. We expected on forehand that the use of TAS would lead to a more accurate selection of these consultations. However, the results indicate that GPs are of the opinion that the selection process at both GP cooperatives is not strict enough, especially with regard to selection of consultations at the GP cooperative. This implies that the GPs feel that the triage process at both cooperatives lacks sensitivity. In addition, GPs of both cooperatives were equally satisfied about the specificity of the telephone triage process. Meaning that they believed that many patients correctly receive self-care advice and were not referred for a consultation with a doctor during out-of-hours.

An important effect of computerised decision tools on telephone triage is that it should improve safety and effectiveness of the triage process. This has been addressed by other studies, which have shown that telephone triage using TAS is safe and effective[2, 3, 5, 8]. Nevertheless, results of these studies are also dependent on training, professional level of the person who performs triage, and the setting. Therefore, these results cannot be generalised without restrictions to the Dutch situation. Future research is warranted to investigate the safety and adequacy of telephone triage at Dutch GP cooperatives.

In contrast to many other countries[2, 5, 9-12], telephone triage in the Netherlands, specifically during out-of-hours primary care, is still in its infancy. Many Dutch cooperatives have employed doctor's assistants or nurses to perform this triage, which implies variability in level of education [13]. To increase the structure and adequacy of triage, written protocols and guidelines are available to support the telephone triage process. However, these materials may not be sufficient, because telephone triage is a very complex procedure and requires specific skills[14-18]. Therefore, structured telephone triage supported by computer based decision tools may have great beneficial effects, as it will provide an adequate base to structure and support the telephone triage process. In many other countries where telephone triage and consultation is more established, the use of computer based decision tools is widespread[5, 19]. This study did not find many differences in patient and doctor opinions on triage aspects between a GP cooperative that uses computer based decision software and one that uses

only written protocols and guidelines. However, more aspects have to be investigated to come towards a conclusion on preference of triage system. Nevertheless, there is great potential for the use of computer based decision tools at Dutch GP cooperatives considering the need for increased transparency and adequacy of telephone triage[13].

In conclusion, patients are more satisfied about the telephone advice they receive when TAS is used. In addition, GPs are more satisfied about their function of telephone GP, but are equally satisfied or dissatisfied about the selection of consultations.

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Appendix 1. (Original items are in Dutch*)

Scale 1. Triage (Cronbach's alpha = 0.84)
Regularly, I see patients in my practice who received a self-care advice during out-of-hours, while they should have been referred to a GP. (-)
Often, I see patients in my own practice who were only reassured during out-of-hours, while action should have been taken. (-)
Regularly, I see patients in my practice who have not received adequate care during out-of-hours because of incorrect telephone triage. (-)

Scale 2. Appropriateness of patient contacts (Cronbach's alpha = 0.69)
Many patient contacts during out-of-hours are inappropriate (-)
The number of inappropriate patient contacts during out-of-hours is a threat to the quality of care of patients requiring acute primary care (-)

Scale 3. Function of telephone GP (Cronbach's alpha = 0.80)
It is nice to perform the work of the telephone GP (+)
Regularly, the work of the telephone GP is frustrating (-)
The experienced workload of the telephone GP is too high (-)

Scale 4. Selection of telephone consultations (Cronbach's alpha = 0.75)
The telephone consultations that I receive as a telephone GP are very well selected by the doctor's assistant (+)
The assessment of urgency of the telephone consultations is good (+)
The number of calls passed through by the doctor's assistant to the telephone GP, is too much (-)

Scale 5. Information to supervise the doctor's assistant (Cronbach's alpha = 0.78)
I sufficiently trust the information given by the doctor's assistants to authorise the call they handled (+)
I receive enough information about the call handled by the doctor's assistant to authorise (+)

Scale 6. Selection of consultations at the GP cooperative (Cronbach's alpha = 0.79)
The consultations at the GP cooperative are very well selected (+)
The urgency of patients' complaints referred to the GP cooperative is well assessed(+)
Too many patients are referred to the GP cooperative for a consultation (-)

Scale 7. Selection of home visits (Cronbach's alpha = 0.75)
The home visits are very well selected (+)
The doctor's assistant orders too many home visits (-)
The urgency of complaints of patients who receive a home visit are well assessed (+)
The telephone GP orders too many home visits (-)

Scale 8. Overall satisfaction (Cronbach's alpha = 0.80)
I am satisfied about the current arrangements of out-of-hours care (+)
I am satisfied about the organisation and functioning of my GP cooperative (+)

* The provisional translation into English is meant to inform the reader of the content of the scales and cannot be seen as a definite one.

Chapter 9

Follow-up care by patient's own general practitioner after contact with out-of-hours care. A descriptive study.

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ABSTRACT

Background: Little is known about the care process after patients have contacted the GP cooperative for out-of-hours care. The objective of this study was to determine the dimension of follow-up care after contact with a GP cooperative for out-of-hours care, and to gain insight into factors that are related to this follow-up care.

Methods: 2805 patients who contacted a GP cooperative for out-of-hours care were sent a questionnaire. They were asked whether they had attended their own GP within a week after their contact with the cooperative, and for what reason. To investigate whether other variables are related to follow-up care, a logistic regression analysis was applied. Variables that were entered in this analysis were patient characteristics (age, gender, etc.) and patient opinion on correctness of diagnosis, urgency and severity of the medical complaint.

Results: The response rate was 42%. In total, 48% of the patients received follow-up care with their own GP. Only 20% was referred or advised to attend their own GP. Others attended because their medical condition worsened or because they were concerned about their complaint. Variables that predicted follow-up care were the patient's opinion on the correctness of the diagnosis, patient's health insurance, and severity of the medical problem.

Conclusion: Almost half of all patients in this study who contacted the GP cooperative for out-of-hours care attended their own GP during office hours within a week for the same medical complaint. Most important factor that predicted follow-up care at the patient's own GP after an out-of-hours contact was the patient's degree of confidence with the diagnosis established at the GP cooperative. Despite the limited generalisability, this study is a first step in providing insight into the dimension of follow-up care after a patient has contacted the GP cooperative for out-of-hours primary care.

INTRODUCTION

During the last decade, out-of-hours primary care in the Netherlands has been reorganized from practice-based services to large-scale general practitioner (GP) cooperatives[1]. Currently, over 90% of the Dutch population is covered by more than 120 GP cooperatives for out-of-hours primary care. The initiative for this reorganization has come mainly from the medical profession itself. Research has shown that similar reorganisations had beneficial effects in other countries like the UK and Denmark; GPs' satisfaction with out-of-hours services increased and the number of hours the GP has to be on call dropped substantially [2]. Also patients seem to be fairly satisfied with out-of-hours primary care delivered by GP cooperatives. However, patients seem to be less satisfied when receiving telephone advice only [3-5].

GP cooperatives, being a new type of organisation in Dutch health care, are initiated to enhance the efficiency of current care provision. Besides the increased satisfaction of GPs, a further improvement of the efficiency may well be possible. Research into utilisation of out-of-hours services and patient flow can generate relevant insight into functioning of out-of-hours care organisations. Insight into how many patients utilise out-of-hours services, what type of consultation they receive, and which care process follows their contact with the GP cooperative can supply information about the efficiency of the out-of-hours care organisation. Utilisation of out-of-hours services and the type of consultations patients receive have been regularly investigated[2]. However, little is known about the care process after patients have contacted the GP cooperative for out-of-hours care. Only a few studies have included analyses on demand of follow-up care at the patient's own GP's practice, but show wide variability in numbers and out-of-hours care settings. McKinley et al. [6] found that 54% of all patients who received telephone advice only during out-of-hours provided by patients' own GP or by commercial deputising services, attended their own GP during office hours with the same problem within two weeks after their out-of-hours contact. For patients who received a home visit this proportion was 45%. Two studies on GPs working at a hospital's emergency department reported that 22 to 26% of the patients went to their own GP within three months after their contact with the GP at the emergency department[7, 8]. Neither one of these studies, which used patient reports, do give insight into how many of these patients were advised to see their own GP for follow-up care, or attended at their own initiative. A study by Shipman et al.[9] showed that GPs working out-of-hours in a practice-based setting referred about 17% of all patients to the patient's own GP the next day. This leaves unknown how many attended at their own initiative.

The purpose of this study is to determine the dimension of follow-up care after contact with a GP cooperative for out-of-hours care, and to gain insight into factors that are related to this follow-up care.

METHODS

The study was conducted in the province of Limburg in the south of the Netherlands. In this province there are seven GP cooperatives operational, which cover a population of about 1.1 million. (Total population of the Netherlands is approximately 16 million.) From March to June 2003, 2805 patients from these seven GP cooperatives were sent a questionnaire within three weeks after they had been in contact with the GP cooperative. Of these 2805 questionnaires 935 were sent to patients who received telephone advice only, 935 to patients who attended the GP cooperative, and 935 to those who received a home visit. This study was part of a larger study on patient satisfaction with out-of-hours primary care. The study was approved by the institutional medical ethics board of the University Hospital Maastricht.

Patients were asked to report whether they had attended their own GP within a week after their contact with the GP cooperative for out-of-hours care for the same medical complaint. They were also asked about their reasons for this attendance.

To investigate whether other variables could predict follow-up care we also collected information on patient's age and gender, patient's education level (low, medium, high), and health insurances. Health insurance was used as a measure of the patient's socio-economic status: people with an income below a certain amount (some 60% of the population) are compulsorily insured under a public scheme (the Health Insurance Fund). Everyone else has to take out private insurance. Other variables that were collected included: whether the patient thought the diagnosis made by the GP of the cooperative was correct, urgency and severity of the medical complaint (as judged by the patient), patient's concern about his medical condition, whether the patient received the type of consultation (telephone advice, consultation at the GP cooperative, home visit) he or she expected, and the patient's opinion on performance of the GP cooperative on a 10-point scale (1 = very poor and 10 = very good).

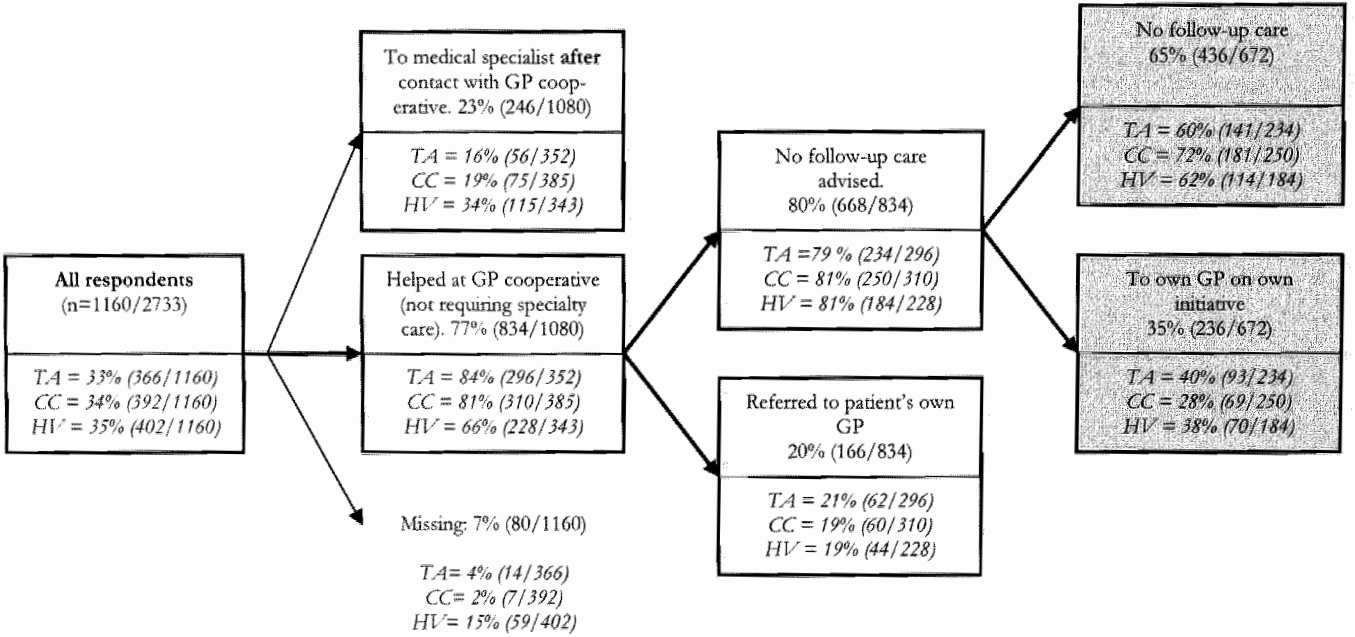

Figure 1. Flow chart of patient follow-up care after contact with the GP cooperative for out-of-hours care. Grey boxes represent data on which the logistic regression has been performed. (TA = telephone advice; CC = consultation at the GP cooperative; HV = home visit.)

Statistics

Descriptive statistics were applied to gain insight into the extent and patients' reasons of follow-up care after contact with the GP cooperative. We performed logistic regression analysis to determine any other factors related to follow-up care. All other variables except for the patient's reason for attendance were entered in the analysis. Variables that did not significantly contribute ($P > 0.10$) to the predictive model were excluded by backward deletion. Patients included in the logistic regression analysis had either not attended their own GP, or had attended their own GP within a week but were not referred or advised to attend their own GP by the GP or doctor's assistant of the GP cooperative.

Table 1. Reasons given by patients for seeking follow-up care with their own general practitioner after their contact with the GP cooperative for out-of-hours care.

	Telephone advice	Consultation at the GP cooperative	Home visits	Total
	n (%)	n (%)	n (%)	n (%)
Referred or advised by GP	62 (40.0)	60 (46.5)	44 (38.6)	166 (41.7)
Worsening of complaint	38 (24.5)	30 (23.3)	23 (20.2)	91 (22.9)
Wrong advice or treatment	11 (7.1)	6 (4.7)	3 (2.6)	20 (5.0)
Worried	26 (16.8)	15 (11.6)	26 (22.8)	67 (16.8)
Other reasons	18 (11.6)	18 (14.0)	18 (15.8)	54 (13.6)
Total	155 (100.0)	129 (100.0)	114 (100.0)	398 (100.0)

RESULTS

Seventy-two of the 2805 questionnaires were excluded, either because they could not be delivered (patient had moved or had given a false address), the patient had died, or the patient was sent more than one questionnaire (in case of multiple contacts). Eventually the response was 42.4% (1160/2733). Of this group, 834 patients reported to have been helped by the GP or the doctor's assistant of the GP cooperative and did not receive care by a medical specialist at the hospital's emergency department (see figure 1). In total, 48.2% (166+236/834) of these patients reported to have attended their own GP within a week after their contact with the GP cooperative with the same medical problem. 19.9% (166/834) attended their own GP on advice of the GP or doctor's assistant of the GP cooperative. About one-third of all patients not referred or advised to attend their own GP, still went to see their own GP within a week after their contact with the cooperative at their own initiative.

Table 2. Variables related to not-advised follow-up care with the patient's own GP after contact with the GP cooperative as dependent variable (1=follow-up care, 0=no follow-up care).

	B	SE	Sign.	Odds ratio Exp(B) (95%CI)
Overall				
Diagnosis [a]	-1.966	0.264	0.000	0.140 (0.083 – 0.235)
Severity [b]	0.567	0.222	0.011	1.764 (1.142 – 2.724)
Insurance [c]	0.409	0.229	0.074	1.506 (0.961 – 2.360)
Constant	0.265	0.349	0.448	1.303
Telephone advice				
Diagnosis [a]	-2.749	0.477	0.000	0.064 (0.025 – 0.163)
Severity [b]	0.607	0.349	0.082	1.835 (0.927 – 3.634)
Insurance [c]	0.886	0.388	0.022	2.425 (1.134 – 5.187)
Constant	0.842	0.573	0.141	2.322
Consultation at the GP cooperative				
Diagnosis [a]	-2.075	0.484	0.000	0.126 (0.049 – 0.324)
Worried [d]	1.073	0.520	0.039	2.925 (1.056 – 8.100)
Constant	-0.083	0.651	0.899	0.920
Home visits				
-	-	-	-	-

[a] Diagnosis: 1 = right, 0 = wrong.
[b] Severity: 1= severe; 0 = not severe.
[c] Insurance: 1 = public insurance, 0 = private insurance.
[d] Worried: 1= worried about own medical complaint, 0 = not worried.

Overall

Of those patients who were not advised or referred to see their own GP within a week for the same problem but attended their own GP anyway, many of them reported that they had contacted their own GP because of worsening of their medical condition (23%) or because they were worried about their complaint (17%) (see Table 1). In only five percent of the cases, patients reported that wrong advice or treatment was the reason for them to attend their own GP after their contact with the GP cooperative.

Besides these reasons, we identified three other variables to predict follow-up care: the patient's opinion on the correctness of the diagnosis, the severity of the medical problem as judged by the patient, and the patient's health insurance (Table 2). The model with these three variables was more effective in predicting those who did not attend their own GP within a week: 94.0% of non-attenders and 32.7% of attenders were correctly

predicted, with an overall success rate of 72.8%. The variance in attendance accounted for overall was 13% (Cox and Snell test R^2=0.13).

Telephone advice

With respect to patients who received telephone advice only, worsening of complaint and worry about the medical condition were most frequently reported reasons for patients to attend their own GP without being advised or referred (Table 1). In addition to these reasons, we identified the same three variables to predict follow-up care as for the total sample: correctness of the diagnosis, the severity of the medical problem as judged by the patient, and the patient's health insurance (Table 2). The model with these three variables was also more effective in predicting those who did not attend their own GP within a week: 95.0% of non-attenders and 47.2% of attenders were correctly predicted, with an overall success rate of 74.5%. The variance in attendance accounted for overall was 26% (Cox and Snell test R^2=0.26).

Consultation at the GP cooperative

With respect to patients who went to the GP cooperative for consultation, again worsening of complaint and worry about the patient's medical condition were reported as most important reasons to attend the patient's own GP, without being advised or referred. Besides these reasons, we identified two variables to predict follow-up care: correctness of the diagnosis, and the patient's concern about his or her medical problem (Table 2). The model with these two variables was more effective in predicting those who did not attend their own GP within a week: 96.4% of non-attenders and 25.0% of attenders were correctly predicted, with an overall success rate of 76.8%. However, the variance in attendance accounted for overall was small (Cox and Snell test R^2=0.11).

Home visits

Like patients who received telephone advice only or visited the GP cooperative for consultation, patients who received a home visit reported that worry about their medical problem and worsening of the complaint were the main reasons for them to contact their own GP within a week after their contact with the GP cooperative. Only 3 patients (2.7%) said to have attended their own GP within a week because they believed to have received incorrect advice or treatment by the home visiting GP of the GP cooperative.

We also investigated other variables and their relationship with follow-up care, but none of the variables entered in the logistic regression analysis was able to predict whether the patient did or did not attend his or her own GP within one week after they had been visited by the GP of the cooperative at home.

DISCUSSION

This study showed that almost half of all respondents received follow-up care at their own GP's practice, within a week, for the same medical complaint for which they had contacted the GP cooperative. Although a substantial number of these patients (40%) were referred or advised by the cooperative's GPs or doctor's assistants to do so, about 60% of these patients attended their own GP at their own initiative.

According to the Statistics Netherlands Database over the last four years, about 27% of all patients require follow-up care after they have seen their GP for a medical complaint[10]. The fact that in this study substantially more patients received follow-up care can be explained by several factors. First, the medical complaints presented during out-of-hours may be more severe compared to during office hours, and therefore require follow-up care more often. Second, the GP cooperative focuses mainly on medical complaints that cannot wait until the next day, all other non-urgent disorders are often referred to the patient's own GP the next day. Third, patients may not feel fully confident or are not fully satisfied with the way their complaint has been taken care of and want to check this with their own GP. Since we have not compared the situation during office hours with outside office hours, it remains unclear which of these factors contributes the most to the difference in numbers of follow-up care.

In addition to the fact that patients have reported to attend their own GP at their own initiative mainly because their medical condition worsened or that they were worried, we found that generally three other variables were related to follow-up care. The most important variable was whether the patient believed that the correct diagnosis has been made by the cooperative's GP or doctor's assistant. However, this variable might have been biased when the patient's own GP made another diagnosis than either the cooperative's GP or doctor's assistant, since patients may have more confidence in their own GP than in an unknown GP or doctor's assistant. We also found that health insurance was a predictor of follow-up care without referral. This may be explained by the fact that privately insured patients may not be fully reimbursed for these consultations. This implies some kind of financial incentive. In addition, research has shown that

patients with lower socio-economic status more frequently attend their GP[11], which is in line with our findings.

For those who received a home visit, no model could be established that predicts follow-up care at the patient's own GP cooperative. We found that the correctness of the diagnosis as judged by the patient was a strong predictor for follow-up care regarding patients who received telephone advice only, or attended the GP cooperative. However, many patients who received home visits will already have a known diagnosis, which may give this variable limited predictive value in this patient category. Furthermore, in patients who received a home visit the patient's own GP may often take the initiative to visit the patient, possibly because of the severity of the complaint or co-morbidity, instead of the patient taking the initiative to contact the GP. Patients receiving home visits often suffer from more severe conditions and are significantly older than those helped by telephone advice and those who visited the GP cooperative. Also these two factors may give some explanation for not finding a model to predict re-attendance, because it is known that elderly people more frequently contact the GP and that the GP routinely visits the patient to check on his or her condition.

An important limitation of the study is that the response rate to the questionnaire was only 42.4%. Therefore, care should be taken with generalising these results to all patient contacts with GP cooperatives. It could be that the number of patients seeking follow-up care in this study has been overestimated or underestimated. However, the proportion of patients who went to their own GP for the same complaint was similar to that reported in the literature[6]. In addition, the number of patients who attended their own GP for the same medical complaint on advice of the cooperative's GP or doctor's assistant reported in this study (19%), was fairly similar to that reported by Shipman *et al.*[9] (17%). In addition, this study did not provide insight into appropriateness of follow-up care, but is merely a first step in revealing the extent of follow-up care after contact with a GP cooperative. Therefore, it remains unclear whether the extent of follow-up care by the patient's own GP is appropriate or represents inefficient care. Future research is warranted to confirm our study findings and to investigate the appropriateness of follow-up care.

CONCLUSIONS

This study is a first step in providing insight into the dimension of follow-up care after a patient has contacted the GP cooperative for out-of-hours primary care. We showed that about half of all respondents who were helped at the GP cooperative attended their own GP for the same medical

problem within a week. Only a minority of the patients was referred or advised to do so. With respect to those that attended their own GP for the same problem on their own initiative, the perception that the correct diagnosis had been made at the GP cooperative was a strong predictor of non-attendance.

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Chapter 10

General discussion

INTRODUCTION

In the Netherlands, general practice out-of-hours care has been reorganised from small-scale practice rotas to large-scale general practitioner (GP) cooperatives. This reorganisation was an answer to the high workload and growing demand during out-of-hours[1-6]. Nowadays, many differences exist between these GP cooperatives. The objectives of the studies reported in this thesis were to determine the effect of the reorganisation of general practice out-of-hours care on care utilisation and to gain insight in the influence of different models and aspects of out-of-hours care on care utilisation, patient and doctor satisfaction, and costs.

In this thesis a distinction is made between two types of organisational structures of general practice out-of-hours care; integrated and separated out-of-hours care. The integrated system is where the GP cooperative works in close collaboration with the hospital emergency department (ED) and both facilities are joined into one facility. Although integration on all aspects may not be fully accomplished, the term 'integrated system' represents the essence of this type of organisation the best. Separated out-of-hours care is where the GP cooperative works independently from the hospital ED, but may have some agreements on referring patients to one another. Often the GP cooperative is located at some distance from the hospital ED.

The findings reported in the individual chapters are summarised below. Subsequently, conclusions derived from the study findings on different aspects of general practice out-of-hours care are given, after which methodological strengths and weaknesses of the research presented in this thesis are discussed. The chapter ends with implications for health care professionals and policy makers, and recommendations for further research.

SUMMARY OF FINDINGS

Chapter 2 presents the consequences of reorganising out-of-hours primary care from practice rotas to a GP cooperative integrated with the hospital emergency department (ED) on care utilisation in the city of Maastricht. In a before-after study we analysed all patient contacts during out-of-hours during two three-week periods. The results of the study show that after the set up of the GP cooperative the number of patients attending the ED was substantially reduced (minus 53%), but the number of patients contacting a GP during out-of-hours was increased (plus 25%). The shift in patient flow was mainly caused by patients with musculoskeletal disorders or skin problems.

In chapter 3 the results of a study on differences in care utilisation and patient characteristics between two models of out-of-hours care is presented. In this study a comparison was made between a model in which the GP cooperative was separate from the hospital ED and the model described in chapter 2. We found that the integrated GP cooperative had more patient contacts during out-of-hours (279/1000/year) and less patient contacts at the ED (52/1000/year) compared with the separated model (238/1000/year and (66/1000/year) respectively). However, the contact rate at the ED was not found to differ significantly between the two models. Moreover, relatively more patients attended the integrated GP cooperative for a consultation and less received telephone advice only, compared with the separated GP cooperative. About 50% of all patient contacts at the ED in the separated model during out-of-hours was still self-referred.

In chapter 4 we investigated the costs of the two GP cooperatives that were presented in chapter 3. We used annual accounts to assess costs of these GP cooperatives. The results of the study show that the integrated GP cooperative is 9% more expensive, but also has 8% more patient contacts. The differences in costs are probably mainly due to a scale advantage (larger population) of the separated GP cooperative. In addition, the substantial reduction of patient contacts at the ED as presented in chapter 2, had little effect on the costs of the ED itself, because staffing of the ED remained the same. Nevertheless, production at this department was decreased, and as a consequence the health insurer reduced the hospital's budget.

Besides information on costs and care utilisation, we also investigated GPs' satisfaction with out-of-hours primary care, which is presented in chapter 5. This study was conducted at the same GP cooperatives of chapter 3 and 4. A telephone questionnaire was administered to a random sample of 100 GPs; 50 GPs per GP cooperative. We found that GPs were generally satisfied with the way out-of-hours care was organised, although GPs of the separated GP cooperative appeared to be more satisfied than their colleagues of the integrated GP cooperative. Moreover, satisfaction with out-of-hours care organisation was related to opinions on workload, guarantee of gatekeeper function, and attitude towards out-of-hours care as being an essential part of general practice.

Chapter 6 presents findings of a study on the effect of opening GP cooperatives separate from hospital EDs on care utilisation. This study was conducted at three regions during a four-week period before and a four-week period after the set up of all three GP cooperatives. Data was collected on use of primary care and hospital emergency services during out-of-hours. The study results show an increase of out-of-hours primary

care use of approximately 10%, and a decrease in patient contacts with hospital emergency services of 9%.

In 2003, we investigated patient satisfaction with out-of-hours primary care in the province of Limburg. The results of this study are presented in chapter 7. A self-developed questionnaire was distributed to 2805 patients, within three weeks after they had contacted the GP cooperative during out-of-hours. One-third of the questionnaires were sent to patients who had received telephone advice only, one-third to patients who attended the GP cooperative for a consultation, and one-third to patients who received a home visit. Patients appeared to be generally satisfied with out-of-hours primary care, although patients who received telephone advice only were less satisfied. Patient satisfaction with out-of-hours care was related to the doctor's assistant's attitude on the phone, opinion on GP's treatment, and waiting time.

Chapter 8 reports on patient and GP opinions on telephone triage at two GP cooperatives. At one of these two GP cooperatives, telephone triage is supported with a computer based decision support tool (TAS), and at the other only written protocols and guidelines are used. The same patient satisfaction questionnaire was used as presented in chapter 7. With respect to GPs, a new questionnaire was developed. The results indicate that patients who contacted the GP cooperative that uses TAS are more satisfied about the telephone advice they received. According to GPs, the selection of telephone consultations, consultations at the GP cooperative, and home visits is equally as good at both GP cooperatives. However, GPs are the least satisfied with the selection of consultations at the GP cooperative. GPs of both cooperatives are of the opinion to have sufficient information available to authorise and supervise telephone triage.

In chapter 9 we present a study on the extent of follow-up care by the patient's own GP after contact with a GP cooperative for out-of-hours care. We investigated how many patients attended their own GP within a week after they had contacted the GP cooperative, and for what reasons. Moreover, we also studied other variables that may be related to this follow-up visit. Forty-eight percent of the respondents reported to have attended their own GP after contacting the GP cooperative. Only 20% was referred or advised to attend their GP. Others attended because their medical condition worsened or because they were concerned about their complaint. Variables that predicted follow-up care were the patient's opinion on the correctness of the diagnosis, patient's health insurance, and severity of the medical problem.

METHODOLOGICAL CONSIDERATIONS

The type of research as presented in this thesis has inevitably the burden of methodological limitations because of the very dynamic field in which it has to perform. Unlike, for example laboratory studies where research is conducted under well controlled conditions, the field of health services research is often confronted with changing circumstances and other influencing factors that cannot be eliminated in order to prevent confounding. Nevertheless, thoroughly investigating these circumstances and factors will provide researchers with sufficient knowledge on possible confounders, and enables them to judge the results in the light of these confounding factors.

The studies in this thesis were conducted while Dutch out-of-hours care was in the middle of its reorganisation. Only few GP cooperatives were already operational for some time, while many were still starting up. At the start of the study the GP cooperative in Maastricht was the only one in the Netherlands that had integrated the GP cooperative with the local hospital ED. The GP cooperative in Heerlen was the only other cooperative in the province of Limburg. Considering the circumstances, we chose to make comparisons between these two organisations as representations of integrated and separated out-of-hours care. Also in chapter 8 we studied only two cooperatives, one that uses a computer based decision tool to support telephone triage and one that uses written protocols and guidelines. A limitation of studying only two cooperatives is that they presumably do not exactly represent other GP cooperatives in the Netherlands. In addition, many other factors may be of influence on the outcomes of this study, for example the number of EDs open to the public and the composition of the population (rural versus urban). The question is whether the results from these studies can be generalised to other regions in the Netherlands, or are the GP cooperatives and circumstances so region specific that they hinder extrapolation of results. With knowledge about the region, the health care organisations, and the circumstances during and preceding the study, we are convinced that the results are sufficiently valid to represent the consequences of the organisation of out-of-hours care. Although the results in this thesis may not be literally translated into other regions in the Netherlands, they provide a good enough understanding of the effects of differences in organisation of out-of-hours care on different aspects as investigated in this thesis.

Another limitation of some of the thesis' studies is the low response rate on the patient questionnaires. Low response rates make it difficult to

extrapolate study findings to other health care settings, because of uncertainty about the validity of the results.

Nevertheless, the patient satisfaction study showed that non-respondents were not different from the respondents. In addition, in the study on opinions on telephone triage a comparison was made between two patient groups and response rates were low for both settings. Also patient characteristics were similar. In contrast, the validity of the study's results presented in chapter 9 is threatened by the low response rate. Studies have shown that prevalence or incidence of medical conditions based on questionnaire research with low response rates is often misrepresented[7]. In this case where information on prevalence of follow-up care visits at the patient's own GP is gathered, it is unknown whether an underestimation, overestimation or the correct estimation has been made. A fact that supports the validity of our findings is that similar contact rates after out-of-hour care contacts with the patient's own GP have been found previously[8]. More research is needed to confirm our study findings.

The relevance of the results of studies on satisfaction or opinions is most often only temporary. In turbulent times such as during the reorganisation of out-of-hours primary care, not all circumstances may be perfect at a certain point in time. Satisfaction or opinions will easily be influenced by these imperfect local circumstances, despite that improvements may lie ahead which will not be accounted for at that moment. The tenability of the results of these studies will therefore often be short; circumstances may have changed after the study has been conducted, and consequently do not really apply anymore. Nonetheless, this type of research supplies a good indication of people's opinions about aspects of care and quality of care at a given point in time. The results will supply health care professionals and policy makers with valuable information that will help them to improve and develop (out-of-hours) care.

CONCLUSIONS

General practice out-of-hours care has been rapidly reorganised. This reorganisation was not so much directed by scientific knowledge about advantages and disadvantages of different models of out-of-hours care, but predominantly by local preferences. This has led to a diversity of out-of-hours care models in the Netherlands. Nevertheless, this enabled us to investigate the advantages and disadvantages of these different models on various aspects of out-of-hours care, such as utilisation of care, patient and GP satisfaction, costs, and telephone triage.

From the study findings we conclude that setting up GP cooperatives has caused a small but significant shift from patients using hospital emergency care to patients using primary care during out-of-hours. However, when the GP cooperative is integrated with the ED, a more substantial reduction of patients utilising hospital emergency care is established. It seems that costs of general practice out-of-hours care are dominated by the size of the cooperative's population, and not so much by the organisational structure, i.e. integrated versus separated. Nevertheless, costs may be saved when the GP cooperative is integrated with the ED, because of reduced use of the ED.

Patients appear to be generally satisfied with out-of-hours primary care as organised in GP cooperatives, although some issues have been raised that are open to improvement. In addition, GPs are satisfied with the current organisation of out-of-hours care, and prefer this organisation more than the former one.

It seems that patients and GPs do not perceive many differences in computer based telephone triage or telephone triage with protocols. However, more research has to be conducted to investigate the safety of either one of these triage systems.

GP cooperatives have been set up to enhance efficiency of out-of-hours primary care. Nevertheless, results from this thesis suggest some kind of inefficiency considering that half of all patients attend their own GP within a week after contact with the GP cooperative. More research is needed to confirm these findings.

RECOMMENDATIONS FOR POLICY

GATEKEEPER AND INTEGRATION

There has been much debate on the advantages and disadvantages of the role of the GP as gatekeeper to secondary care, nationally and internationally [9-31]. In Europe, twelve countries (Croatia, Denmark, Iceland, Ireland, Israel, Italy, the Netherlands, Norway, Portugal, Slovenia, Spain and the UK) have developed a health care system in which the GP acts as a gatekeeper and largely controls referrals to secondary care[32]. In the United States of America, about 40% of the population has a primary care physician who acts as a gatekeeper to specialist care[26].

Evidence of the effectiveness of primary care gatekeeping is scarce[33]. Ferris et al.[34] found little evidence of beneficial effects of GP gatekeeping on use of secondary care. Moreover, Feldman et al[15]. showed that the gatekeeper model was inefficient with respect to dermatological services. In

contrast, other studies showed more clear positive effects of primary care gatekeeping with respect to referrals to specialty care[35, 36]. Also, not all primary care physicians seem to be in favor of gatekeeping. However, some believe gatekeeping improves their role as care coordinator[22].

Economically, on the other hand, primary care gatekeeping seems to be beneficial. In 1998, European countries with gatekeeping systems spent less on healthcare as a percentage of their gross national product than those allowing direct access to specialists[37]. Moreover, Delnoij et al.[38] suggested that the introduction of gatekeeping in a health care system is likely to reduce health care costs.

The primary goal of GP gatekeeping should be to supply adequate care to patients at the right time at the right place. The results of these studies show that the success of the gatekeeper function during out-of-hours is very much dependent on the organisation of out-of-hours care. Usually, in a GP gatekeeping system patients require a GP's referral to utilise hospital services[39]. However, all gatekeeping systems make an exception for emergencies that can be presented directly to the hospital ED[40]. This is a major leakage of gatekeeping systems, especially during out-of-hours, when GP services are less available in some countries[39, 41]. Several studies have indicated that a substantial number of patients attending the ED (ranging from 17% to 57%) should actually have been seen in a primary care setting[42-45]. In addition, it may be difficult for medical staff at the ED to send non-urgent cases away without providing attention. Keeping the GP cooperative separated from the ED is unlikely to resolve this problem[46]. Reasons for skipping the GP cited most frequently by patients are convenience, lack of timely access to primary care providers, the belief that the medical complaint was very urgent, and the belief that radiography is necessary [46-48]. It seems therefore essential to combine these two out-of-hours care facilities at one single site.

Based on the study findings and the existing literature it is recommended to re-enforce the GP gatekeeper function during out-of-hours. This is best accomplished when GP cooperatives and hospital EDs are joined into one facility, where the GP could be the first person of contact. In that case, the GP decides whether the patient can be treated in primary care or that a referral to specialty care is appropriate. However, this task of selecting patients for primary or hospital emergency care may in the future be substituted to other health care professionals, such as specialised triage nurses.

The positive result of diverting primary care patients away from the hospital ED towards out-of-hours general practice, indicating adequate care at the right place, deserves to be copied in other regions. Not only may this lead to cost savings as suggested in chapter 2 and 4, but also supplies

patients with clarity about which facility to attend in case of a medical problem during out-of-hours. At this facility the patient is directly at the right place, no matter the urgency of the complaint. As suggested in chapter 4, it may be more cost efficient to combine management of the ED and GP cooperative, and to deploy nurses of the ED at the GP cooperative to support GPs in treating non-urgent medical problems.

Additionally, the close collaboration between the ED and the GP cooperative will also enhance cooperation between individual health care providers. This will enable them to exchange expertise and to gain knowledge of each other's working methods. Knowledge about each others working methods has been suggested to enhance efficiency of care[49]. However, it does not seem preferable to exchange working methods, for they are believed to be complementary[50].

TELEPHONE TRIAGE

Telephone triage is an aspect of out-of-hours primary care with great potential. In contrast to many other countries[51-56], telephone triage in the Netherlands, specifically during out-of-hours primary care, is still underdeveloped. As shown by several studies, including one in this thesis, patients seem to be less satisfied when receiving telephone advice only[57-61]. However in times of increased demands and increased distances to health care providers, telephone consultation may serve as an adequate alternative in many cases. Because telephone triage is still relatively new in the Netherlands, effort has to be put in developing safe and adequate telephone triage systems. For that matter, it is essential to set standards or criteria for those professionals that perform telephone triage. Moreover, a specific educational program has to be developed to adequately train these professionals, acknowledging the complexity and specific skills that are required for performing telephone triage[62-66].

WHERE DO WE GO FROM HERE?

Future development of general practice out-of-hours care in the Netherlands will obviously not only be guided by scientific knowledge, such as presented in this thesis, but also by a variety of other factors. Besides GPs other actors such as patients, health insurers, and politics will play a role in out-of-hours care development. For that matter, it is important for Dutch general practice to develop a solid view on future out-of-hours care. Questions must be answered such as; "where does general practice go from

here?"; "do GPs still feel that they should be available during out-of-hours?"; "do GPs still feel that it is important to perform these services, and for what reasons?"; and "what is the role of general practice within the spectrum of acute care during out-of-hours?" It is important to anticipate future development as much as possible and to realise how these potential developments fit in with the view GPs have on their own profession.

Developments in out-of-hours care in other countries may also have some influence on, or may be an omen of, the future of out-of-hours care in the Netherlands. For example, in the UK – a country that has been an example to the Dutch in developing of out-of-hours care – GPs have been given the opportunity to opt out of their 24-hour responsibility. Recently, out-of-hours primary care has become the responsibility of local primary care trusts, which can employ GPs or other professionals to perform these services. This leaves many GPs in the UK with the opportunity to concentrate fully on care during normal surgery hours, and not having to worry anymore about performing shifts on a regular basis. Is this an exclusive UK scenario, or is this the future picture of Dutch out-of-hours care?

The Dutch minister of Health has advocated more responsibility and direction for the health insurance companies in developing out-of-hours care. The minister also advocated integration of GP cooperatives and hospital emergency departments. Health Insurance companies may want to push GP cooperatives in collaboration with emergency departments, because integrating services may be more cost efficient (and may be conditional for adequate adjustment between primary and secondary acute care). It is clear that the findings of this thesis support this model. However, not all regions in the Netherlands may be suitable for this type of collaboration. In order to successfully organise cooperation or integration between secondary and primary care, all actors have to be accounted for. Moreover, local circumstances such as the number of hospitals in the region and population density will also play a role.

Presumably, also 'new' professionals will come on stage in general practice out-of-hours care. Actually, some have already been introduced, such as the doctor's assistant to whom telephone triage has been substituted. Perhaps in the future at places where patients can enter out-of-hours care facilities without an appointment, triage nurses may be introduced. But one may also think of allied health professionals to be introduced, for example physiotherapists who may deal with sports injuries. Many developments and changes are possible, but it is essential for GPs to have clarity about their role and position in acute care during out-of-hours, so that not all these changes are predominantly directed by ad-hoc decisions and external parties that impose certain measures.

The role of GP cooperatives within general practice may also grow. For example in facilitating deputy services for daytime practices in case of holidays or illness. Moreover, GP cooperatives nowadays are set up exclusively for out-of-hours. It is reasonable to suggest that in the future they may also open during office hours and serve as a continuous backup for the local GP practices, or for patients who are not registered with a GP. When located at the hospital emergency department and open during office hours, the GP cooperative has the opportunity to coordinate care of patients attending the facility without referral not only outside (see chapter 2) but also inside office hours.

These considerations and determinants are elements to support the future development of one or more models of out-of-hours care. It is a matter of urgency for the professional and academic bodies of general practice to bring the stakeholders together to remain in charge of one's own future.

RECOMMENDATIONS FOR FUTURE RESEARCH

It is striking to see that so little research has been conducted in the Netherlands on out-of-hours primary care in the past. Only a few researchers have taken the challenge to investigate this part of general practice[67-73]. Yet, since the rise of GP cooperatives, an exponential growth of research on this field has emerged. Despite this rapid expansion of research, we are still at the beginning of developing evidence based general practice out-of-hours care. Therefore, many aspects are still open for research. In this paragraph recommendations for future research will be given. Some recommendations have already been mentioned in the individual chapters of this thesis. The most compelling of these as well as some broader recommendations will be mentioned here.

This thesis has covered mainly process related issues with respect to general practice out-of-hours care. The time has come to explore aspects of out-of-hours primary care more in depth. One aspect that should receive high priority is the safety and effectiveness of telephone triage. In addition, it should be made clear what the exact demands and criteria are for doctor's assistants to adequately perform telephone triage. Telephone triage has been implemented in the Netherlands, without clear knowledge about safety and adequacy of telephone triage. As indicated by the Dutch Health Care Inspectorate the quality of telephone triage is failing, because of lacunas in telephone procedures, protocols, and structured supervision[74]. It should be made clear whether it is appropriate to use written protocols and guidelines,

or that computer based decision support tools should be used. Does the latter significantly improve the quality of telephone triage?

Another important issue is the safety of directing primary care patients away from the hospital ED as is done in an integrated model for out-of-hours care. How effective is the triage process at the 'gate' in dividing patients into categories such as urgent or non-urgent, or as hospital emergency care or primary care. And if patients with obscure urgent problems slip through this triage process and end up in the non-urgent group, how fast will the GP recognize the urgency of the complaint and still refer the patient to hospital emergency care?

A third issue of significance is the GPs' vocational training. In the changing world of out-of-hours primary care, the occupational requirements of GPs have changed similarly. During out-of-hours the GP has several roles, which may require specific expertise. Knowledge about this and how this should be implemented in the GPs' vocational training and continuing medical education (CME) deserves attention.

A fourth issue that should deserve attention by researchers, but also by health professionals and policy makers, is the efficiency of care at the GP cooperative. Effort should be put in answering the question whether out-of-hours care should be an institute to quickly help patients with their problems but which is only temporarily sufficient? Or should the GP cooperative provide complete care, and make sure that, as few people as possible, require follow-up care at their own GP? The latter indicating that patients with not so urgent cases are still treated at the GP cooperative and are not advised to visit their own GP the next day. In this way the pressure or workload of the usual daytime practice can be alleviated. In addition, it would be interesting to know whether the overall contact rate with general practice (during and outside office hours) has increased.

In the general introduction of this thesis a remark has been made considering continuity of care. It has been argued that the introduction of GP cooperatives has been an impediment for continuity of care. Future research should also focus on this important aspect of general practice.

GP cooperatives provide a great opportunity for continuous standardised collection of data on morbidity during out-of-hours. Knowledge about morbidity may serve as a source for epidemiological research, support intervention research, but may also give direction to vocational training of GPs. Moreover, insight in these figures may enhance tuning of domains of care between the ED and the GP cooperative.

Many other aspects of out-of-hours primary care should receive attention by researchers in this field. For example, the accessibility of the GP cooperatives, cooperation between health care professionals, substitution of tasks, and diagnostic possibilities for GPs.

With the introduction of GP cooperatives, general practice during out-of-hours has become more professionalised. However, as argued by the Dutch Health Care Inspectorate[74], many aspects of general practice out-of-hours care still have to be improved. We hope this thesis will contribute to a better understanding of different aspects of out-of-hours primary care and that it supports the development of high quality out-of-hours primary care.

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SUMMARY

CHAPTER 1 – GENERAL INTRODUCTION

Out-of-hours care was and still is an important part of general practice. In a renewed mission statement the Dutch College of General Practitioners (NHG) and the Dutch Association of General Practitioners (LHV) acknowledged the 24-hour responsibility of GPs for their patients as one of the cornerstones of general practice. During the last decade, the organisation of out-of-hours primary care in the Netherlands has experienced a radical shift from GPs providing care to patients in small practice groups to a situation where out-of-hours care is organised in large-scale GP cooperatives. In these cooperatives, generally between 40 and 120 GPs are joined, providing care for populations ranging from 80,000 to 300,000 inhabitants. The reorganisation in the Netherlands was preceded by similar reorganisations in out-of-hours primary care in the early 1990s in the UK and Denmark. The change in the out-of-hours primary care organisation was mainly motivated by increased GP dissatisfaction with performing these services. The development of organisational structures of GP cooperatives has been predominantly guided by local preferences, which resulted in many differences between GP cooperatives. Generally, there is a distinction in accessibility and a distinction in cooperation with the hospital emergency department. An important part of this thesis addresses issues related to the effects resulting from differences in organisation between GP cooperatives working in close collaboration with a hospital emergency department and those GP cooperatives that are organised independently of hospital emergency services.

The purpose of the studies in this thesis was to gain insight into different aspects of out-of-hours primary care. These aspects are related to changes in care utilisation, costs, patient and GP satisfaction, and telephone triage. Results from these studies are intended to support health care professionals and health policy makers in optimising out-of-hours general practice.

CHAPTER 2

This chapter presents the effect of the Maastricht out-of-hours GP cooperative on the caseload at the emergency department of the University Hospital Maastricht. It also gives a description of characteristics of patients utilizing out-of-hours care. In January 2000 out-of-hours primary care in Maastricht was reorganised, and a GP cooperative was set up. This cooperative is located at the emergency department of the University Hospital Maastricht; the city's only hospital. In the first year after the set up, 59 GPs participated in the GP cooperative. All patients attending the

Maastricht out-of-hours care facility are first seen by a GP, unless they have a referral for secondary care. During a three-week period a year before and a three-week period a year after the set up of the GP cooperative, all patient records with out-of-hours primary and hospital emergency care were analysed. The main outcome measures in this study were: the number of patients utilizing out-of-hours care, their age and gender, diagnoses, post-ED care, and serious adverse events. We found that after establishing the GP cooperative, the proportion of patients utilising emergency care decreased by 53%, and the proportion of patients utilising primary care increased by 25%. The shift was the largest for patients with musculoskeletal disorders or skin problems. There were fewer hospital admissions, and fewer subsequent referrals to the patient's own GP and medical specialists. No substantial change in new outpatient visits at the hospital or in mortality occurred. Based on these findings we concluded that the GP cooperative in Maastricht had complemented the hospital emergency department and reduced the use of hospital emergency care during out-of-hours.

CHAPTER 3

In this chapter we investigated numbers and characteristics of patients utilising primary or emergency care in two different organisations of out-of-hours care. We compared the Maastricht GP cooperative (a representative of an integrated out-of-hours care model) with the Heerlen GP cooperative (a representative of a separated out-of-hours care model). Important differences between these two organisations are the accessibility and the location of GP cooperative. The Heerlen GP cooperative is situated in the centre of the city and is more than 5 km away from the nearest emergency department. This GP cooperative can only be visited by appointment. The Maastricht GP cooperative has free access and is located within the emergency department of the University Hospital Maastricht. During a three-week period in 2001 all registration forms of patient contacts with out of hours care (GP cooperative and emergency department) were collected and with respect to the primary care patients a random sample of one third was analysed. The results of the study showed that the Heerlen GP cooperative had 238 patient contacts per 1000 inhabitants per year, and the Maastricht GP cooperative had 279 patient contacts per 1000 inhabitants per year. The contact rate at the emergency departments in the Heerlen region is 66 per 1000 inhabitants per year and of the emergency department in Maastricht 52 per 1000 inhabitants per year. About half of all patients attending the emergency departments in the Heerlen region during out-of-

hours were self-referred. In contrast, at the emergency department in Maastricht only 16% was labelled as self-referred. We concluded that the organisation of out-of-hours care in Maastricht has optimised the GP's gatekeeper function and thereby led to fewer self-referrals at the emergency department, compared with Heerlen. Moreover, it appears that the integrated model results in relatively more patients being seen at the primary care facility and fewer at the emergency department, compared with the separated model.

CHAPTER 4

In this chapter we discuss the costs of out-of-hours primary care, and focus on implications of differences in organisation of GP cooperatives on costs. General practice outside office hours changed very quickly and the set up of the new out-of-hours care organisation was predominantly guided by local preferences. In this study we investigated costs of the two GP cooperatives described in chapter 3, i.e. an integrated and a separated GP cooperative. In addition, the costs of the emergency department of the University Hospital Maastricht before and after the set up of the GP cooperative were analysed. Previous studies have shown that integrating the GP cooperative with a hospital emergency department results in a substantial reduction in patients utilising hospital emergency care and an increase in patients utilising primary care. It was expected that this shift would have an effect on costs of out-of-hours care. This study was performed to provide insight in costs of these two different models of out-of-hours care in order to support health care professionals and policy makers in developing out-of-hours primary care. GP cooperatives' annual accounts of 2003 were used to assess costs. With respect to the emergency department of the integrated model, we used the annual accounts of the year before and the year after the set up of the GP cooperative. The study results show that the costs of primary care appear to be more dependent on the size of the population the cooperative covers, than on the way the GP cooperative is organised, i.e. separated versus integrated. In addition, despite the substantial reduction of patients, locating the GP cooperative at the same site as the emergency department was found to have little effect on costs of the emergency department. We suggest that sharing more facilities and personnel between the emergency department and the GP cooperative may improve cost-efficiency.

CHAPTER 5

In this chapter we describe a study on GP satisfaction with out-of-hours primary care in the Maastricht and Heerlen region. The purpose of this study was to gain insight into GPs' satisfaction with working at GP cooperatives for out-of-hours care in separated and integrated cooperatives. A random sample of 50 GPs per GP cooperative was selected. Telephone interviews were performed to assess GP satisfaction. Opinions on different aspects of GP cooperatives for out-of-hours care were measured, and regression analysis was performed to investigate if these could be related to GP satisfaction with out-of-hours care organisation. The results showed that GPs from the separated model were more satisfied with the organisation of out-of-hours care than GPs from the integrated model. Satisfaction about out-of-hours care organisation was related to opinions on workload, guarantee of gatekeeper function, and attitude towards out-of-hours care as being an essential part of general practice. Cooperation with medical specialists was much more appreciated at the integrated model versus the separated model. We concluded that GPs of both cooperatives appear to be generally satisfied with the organisation of GP cooperatives for out-of-hours care.

CHAPTER 6

It has been argued that the setting up of GP cooperatives would not only increase use of out-of-hours primary care but also increase the use of hospital emergency services. In chapter 6 we present a study that investigated use of out-of-hours primary and secondary care before and after the set up of three GP cooperatives in adjacent regions. During a four-week period before (2001) and a four-week period after (2002) the reorganisation of out-of-hours primary care all patient contacts with general practitioners and hospital emergency departments were analysed. The study was conducted in the South of the Netherlands. The study results showed a 10% increase in patient contacts with out-of-hours primary care, and a 9% decrease in patient contacts with out-of-hours emergency care in the new situation. The number of self-referrals at the emergency departments was reduced by approximately 4%. We concluded that the reorganisation of out-of-hours primary care has led to a shift in patient contacts from hospital emergency care to primary care.

CHAPTER 7

Chapter 7 presents a study on patient satisfaction in the province of Limburg. Patient satisfaction has been acknowledged as an important feature that can supply health care providers and policy makers with important information on the patient's perception of the quality of care. From March to June 2003, we distributed 2805 questionnaires to patients within three weeks after they had contacted the GP cooperative in their region. One-third of these questionnaires was sent to patients who had only received telephone advice, one-third to patients who attended the GP cooperative for consultation, and one-third to patients who received a home visit. Four weeks after the first reminder, a non-respondents telephone interview was performed among a random sample of 100 patients. Analyses were performed with respect to the type of consultation. About 42% of the patients returned the questionnaire. Sixty-seven percent of patients who received telephone advice only reported to be satisfied with out-of-hours care. About 80% of patients who went to the GP cooperative for consultation or those receiving a home visit, reported to be satisfied. Factors that were strongly associated with overall satisfaction included, the doctor's assistant's attitude on the phone, opinion on GP's treatment, and waiting time. Our conclusion is that patients seem generally satisfied with out-of-hours primary care as organised in GP cooperatives. Moreover, patients who received telephone advice only are less satisfied compared to those who attended the GP cooperative or those who received a home visit. Differences in patient expectation about the type of care that is appropriate for their problem and the actual received care may explain these differences in satisfaction.

CHAPTER 8

In chapter 8 we report on a study that investigated patient and GP opinions on out-of-hours primary care telephone triage. Telephone triage has become an important facet of out-of-hours general practice. Most GP cooperatives nowadays use telephone triage to assess the urgency of the patient's problem in order to prioritise treatment. We performed this study to gain insight in patient and GP opinions on telephone triage with and without computer based decision support software (the Telephone Advice System (TAS)) at GP cooperatives for out-of-hours primary care. Questionnaires were sent to patients and GPs of two GP cooperatives. In these questionnaires respondents were asked about their opinions on aspects of telephone triage. At one GP cooperative the doctor's assistants

performing telephone triage use TAS, and at the other GP cooperative the telephone triage process is supported by written protocols and guidelines. Approximately 36% of the patients and 80% of the GPs returned the questionnaire. The results show that patients who contacted the cooperative that uses TAS were generally more satisfied about the telephone advice, but less satisfied about the accessibility of the GP cooperative by phone. GPs of the cooperative that uses TAS were more satisfied about their role as telephone GP, but were equally satisfied about the information given by the doctor's assistant to supervise and authorise the handling of the call. GPs of both cooperatives were also equally satisfied about the selection of consultations. From these findings we concluded that the use of TAS seems to increase patient satisfaction with telephone advice. However, according to GPs' opinions, the appropriateness of the selection of consultations at the cooperative that uses TAS is equal to that of the GP cooperative that uses written protocols and guidelines to support the telephone triage process.

CHAPTER 9

Chapter 9 focuses on the process of care after patients have contacted the GP cooperative. Little is known about this process and therefore, this study was undertaken to determine the dimension of follow-up care after contact with a GP cooperative for out-of-hours care. We also investigated factors that might be related to this follow-up care. Data from the patient satisfaction questionnaire (chapter 7) were used. In the same questionnaire patients were asked whether they had attended their own GP within a week after their contact with the cooperative, and for what reason. To investigate whether other variables are related to follow-up care, a logistic regression analysis was applied. Variables that were entered in this analysis were patient characteristics (age, gender, etc.) and patient opinion on correctness of diagnosis, urgency and severity of the medical complaint. The response rate was 42%. In total, 48% of the respondents received follow-up care with their own GP. Only 20% was referred or advised to attend their own GP. Others attended because their medical condition worsened or because they were concerned about their complaint. Variables that predicted follow-up care were the patient's opinion on the correctness of the diagnosis, patient's health insurance, and severity of the medical problem. Although the low response rate limits generalisability of the study results, the study indicates that a large proportion of patients who contact the GP cooperative for out-of-hours care attend their own GP during office hours within a week for the same medical complaint. Most important factor that predicted follow-up

care at the patient's own GP after an out-of-hours contact was the patient's degree of confidence with the diagnosis established at the GP cooperative. This study is a first step in providing insight into the dimension of follow-up care after a patient has contacted the GP cooperative for out-of-hours primary care.

CHAPTER 10 – GENERAL DISCUSSION

In chapter 10 we present a general discussion of the main findings and methodological aspects of the studies described in this thesis. Moreover, the relevance of these findings is discussed and recommendations for health care policy and future research are given. Also, a view on future development of out-of-hours general practice is presented. The thesis' study results showed that an integrated out-of-hours care model has the ability to divert primary care patients away from the hospital emergency department towards out-of-hours general practice. This indicates that this system is conditional for an optimal GP gatekeeper function. The benefit of this specific model is that out-of-hours primary and secondary care when concentrated at one single site, supply patients with clarity about which facility to attend in case of a medical problem during out-of-hours. Additionally, the close collaboration between the emergency department and the GP cooperative has the potential to enhance cooperation between individual health care providers, which may enable them to exchange expertise and to gain knowledge of each other's working methods. Other important aspects of general practice out-of-hours care, such as telephone triage, follow-up care, vocational training, et cetera, should receive intensive attention by health policy makers, health professionals, and the scientific community in the near future in order to optimise the system of current out-of-hours care.

SAMENVATTING

HOOFDSTUK 1 – ALGEMENE INTRODUCTIE

De avond-, nacht- en weekenddiensten (ANW diensten) van huisartsen maken nog steeds een belangrijk onderdeel uit van de Huisartsgeneeskunde. In 2002 publiceerden het Nederlands Huisartsen Genootschap (NHG) en de Landelijke Huisartsenvereniging (LHV) een herziene visie of de Huisartsgeneeskunde, waarin de 24-uurs verantwoordelijkheid van huisartsen voor hun patiënten als een van de hoekstenen van de Huisartsgeneeskunde wordt erkend. Tijdens het afgelopen decennium is de organisatie van de ANW diensten rigoureus veranderd. Waar eerst huisartsen in klein groepsverband de diensten regelden, worden de diensten nu in grootschalige huisartsendienstenstructuren (huisartsenposten) georganiseerd. Gemiddeld genomen participeren tussen de 40 en 120 huisartsen binnen één zo'n dienstenstructuur, waarbij zij gezamenlijk zorg dragen voor zo'n 80 tot 300 duizend inwoners. Een soortgelijke reorganisatie van de ANW diensten voor huisartsen heeft zich begin 90-er jaren in het Verenigd Koninkrijk en Denemarken voorgedaan. Een van de belangrijke redenen voor de Nederlandse reorganisatie was de toenemende ontevredenheid van huisartsen met deze diensten. De ontwikkeling van de organisatiestructuren van de huisartsenposten is op de meeste plaatsen in Nederland met name geleid door lokale voorkeuren, waardoor er toch wat verschillen tussen de huisartsendienstenstructuren bestaan. In het algemeen kan er onderscheid worden gemaakt op het gebied van de toegankelijkheid (vrije inloop óf van tevoren een telefonische afspraak maken) én op het gebied van de samenwerking of integratie met de spoedeisende hulp van het lokale ziekenhuis. Het doel van het onderzoek in dit proefschrift is om inzicht te krijgen in de verschillende aspecten van de ANW diensten van huisartsen. Daarbij wordt ook specifiek aandacht besteed aan verschillen tussen organisatiestructuren van huisartsenposten en hun invloed op diverse aspecten, zoals het gebruik van voorzieningen, kosten, patiënten- en huisartstevredenheid, en telefonische triage. De resultaten van deze studies zijn bedoeld om professionals en beleidsmakers in de gezondheidszorg te ondersteunen bij het optimaliseren van de ANW dienstenstructuren.

HOOFDSTUK 2

Dit hoofdstuk beschrijft een onderzoek naar het effect van de reorganisatie van de Maastrichtse ANW diensten op het gebruik van eerste- en tweedelijns voorzieningen buiten kantooruren. In januari 2000 is de huisartsenpost in Maastricht opgericht. Deze huisartsenpost fungeert als voorportaal van de spoedeisende hulp van het academisch ziekenhuis

Maastricht (azM). Het azM is het enige ziekenhuis in deze regio. Gedurende het eerste jaar deden alleen de Maastrichtse huisartsen dienst vanuit deze huisartsenpost. Tijdens de openingsuren van de huisartsenpost worden patiënten zonder verwijzing door de huisarts gezien en indien nodig doorgestuurd naar de spoedeisende hulp. Gedurende een drieweekse periode een jaar vóór en een drieweekse periode een jaar ná de reorganisatie hebben we alle patiëntencontacten met de huisartsenpost en de spoedeisende hulp geanalyseerd. De belangrijkste uitkomstmaten waren het aantal patiënten dat gebruik maakt van deze voorzieningen, hun leeftijd en geslacht, diagnoses, vervolgzorg, en sterftecijfers en polibezoeken over een heel jaar. De resultaten tonen aan dat het aantal patiënten dat buiten kantooruren op de spoedeisende hulp kwam ná oprichting van de huisartsenpost met zo'n 53% was gedaald. Daar staat tegenover dat het aantal patiënten dat bij de huisarts kwam met 25% was gestegen. Deze verschuiving was het grootst voor mensen met klachten aan het bewegingsapparaat of verwondingen aan de huid. Het aantal ziekenhuisopnames liet een lichte daling zien en er waren minder verwijzingen naar de eigen huisarts of medisch specialist. Er werden geen substantiële veranderingen in sterftecijfers of nieuwe ziekenhuisopnames tussen 1998 en 2001 waargenomen. Op basis van deze gegevens concludeerden we dat de huisartsenpost en spoedeisende hulp complementair aan elkaar zijn en dat de huisartsenpost een significante daling van het aantal patiënten op de spoedeisende hulp heeft bewerkstelligd.

HOOFDSTUK 3

In dit hoofdstuk beschrijven we een studie naar het aantal patiënten en hun kenmerken dat gebruikmaakt van huisartsenzorg en spoedeisende hulp bij twee verschillende organisatiestructuren voor zorg buiten kantooruren. We vergeleken de situatie in Maastricht, waarbij de huisartsenpost in het ziekenhuis op de spoedeisende hulp gevestigd is (zie hoofdstuk 2), met de situatie in Heerlen waarbij de huisartsenpost op enige afstand van het ziekenhuis is gevestigd. De huisartsenpost in Heerlen kan alleen volgens telefonische afspraak worden bezocht, terwijl men bij de huisartsenpost in Maastricht ook zonder afspraak kan binnenlopen (hoewel dit ontmoedigd wordt). Gedurende een drie weken durende periode in 2001 zijn alle patiëntcontacten met de huisartsenposten en de spoedeisende hulpen in deze regio's geanalyseerd. De resultaten laten zien dat, volgens extrapolatie, de huisartsenpost in Heerlen 238 patiënten per 1000 inwoners per jaar zag en de huisartsenpost in Maastricht zo'n 279 patiënten per 1000 inwoners

per jaar. Het aantal contacten met de spoedeisende hulp in de regio Heerlen bedroeg 66 per 1000 inwoners per jaar tegenover 52 patiëntcontacten per 1000 inwoners per jaar voor de spoedeisende hulp in Maastricht. Ongeveer de helft van het aantal patiënten op de spoedeisende hulp in de regio Heerlen kwam zonder verwijzing. In Maastricht werd 16% als 'zelf-verwijzer' geclassificeerd. De resultaten wijzen erop dat de organisatie van de diensten in Maastricht de poortwachterfunctie van de huisarts heeft geoptimaliseerd, waarbij er relatief meer patiënten bij de huisarts terechtkomen en relatief minder bij de spoedeisende hulp van het ziekenhuis.

HOOFDSTUK 4

In dit hoofdstuk zijn de kosten van de huisartsendienstenstructuren in Maastricht en in Heerlen bestudeerd. Tevens hebben we gekeken naar de kosten van de spoedeisende hulp in Maastricht vóór en ná de opening van de Maastrichtse huisartsenpost. Op basis van de resultaten van het onderzoek in hoofdstuk 2, waarbij een forse reductie van het aantal patiënten op de spoedeisende hulp werd gevonden, was de verwachting dat deze reductie mogelijk van invloed zou zijn op de kosten van de spoedeisende hulp. Bij de bepaling van de kosten van de huisartsendienstenstructuur in Maastricht en Heerlen is gebruik gemaakt van de jaarrekeningen uit 2003. Ter bepaling van eventuele verandering in kosten van de spoedeisende hulp van het azM zijn de jaarrekeningen van 1999 en 2000 gebruikt (een jaar voor en een jaar na de opening van de huisartsenpost). Het doel van dit onderzoek was om inzicht te krijgen in de invloed van verschillen in organisatie van de ANW diensten op de kosten van die dienstenstructuur. De resultaten van de studie wijzen erop dat de kosten van de huisartsenpost, uitgedrukt per inwoner per jaar, meer bepaald worden door de grootte van het adherentiegebied dan door de organisatievorm (apart van de spoedeisende hulp gelokaliseerd (Heerlen) versus geïntegreerd (Maastricht)). Tevens valt op dat de kosten van de spoedeisende hulp van het azM, ondanks de substantiële daling van het aantal patiënten (zie hoofdstuk 2), nauwelijks zijn veranderd. Het verder integreren van diverse faciliteiten en personeel kan mogelijk leiden tot hogere kostenefficiëntie.

HOOFDSTUK 5

In dit hoofdstuk wordt een beschrijving gegeven van een onderzoek naar satisfactie en opinies van huisartsen over de huisartsendienstenstructuur in Maastricht en Heerlen. Het doel was om inzicht te krijgen in tevredenheid van huisartsen en te zien welke factoren daarbij een rol spelen. Tevens is bekeken of er verschillen waren tussen satisfactie en opinies van Heerlense en Maastrichtse huisartsen. Per huisartsenpost is een steekproef van 50 huisartsen getrokken die volgens afspraak telefonisch zijn geïnterviewd. De resultaten laten zien dat huisartsen van de Heerlense dienstenstructuur gemiddeld genomen meer tevreden waren over hun huisartsenpost dan hun collega's van de Maastrichtse huisartsenpost. Tevredenheid over de dienstenstructuur bleek met name samen te hangen met opinies over werkdruk, visie op de poortwachterfunctie van de huisarts en de mening over de diensten als essentieel onderdeel van het huisartsenvak. Nadere analyses lieten zien dat in Maastricht met name de factor werkdruk een grote rol speelt bij tevredenheid. In Heerlen spelen met name de twee andere factoren (de poortwachterfunctie en de diensten als essentieel onderdeel) een rol bij tevredenheid over de huisartsenpost. Samenwerking met medisch specialisten werd hoger gewaardeerd in Maastricht dan in Heerlen. De conclusie van het onderzoek luidt dat huisartsen in de regio's Heerlen en Maastricht over het algemeen tevreden zijn over hun nieuwe dienstenstructuur.

HOOFDSTUK 6

Vóór oprichting van de huisartsenposten werd vaak geopperd dat de nieuwe dienstenstructuur een toename van het aantal patiënten op de spoedeisende hulp van het ziekenhuis zou veroorzaken. In dit hoofdstuk presenteren we een studie waarbij we het gebruik van eerste- en tweedelijns zorg buiten kantooruren in drie Limburgse regio's (Roermond, Weert en Sittard/Geleen) hebben bestudeerd. Gedurende een vierweekse periode in 2001 (vóór oprichting van de drie huisartsenposten in deze regio's) en tijdens een vierweekse periode in 2002 (ná oprichting van de huisartsenposten) zijn alle patiëntcontacten geanalyseerd. De resultaten van de studie laten zien dat het aantal patiënten dat buiten kantooruren contact heeft met de huisarts na oprichting van de huisartsenpost met ongeveer 10% is gestegen, terwijl het aantal patiënten dat contact heeft met de spoedeisende hulp buiten kantooruren met zo'n 9% is gedaald. Het percentage zelfverwijzers op de afdelingen spoedeisende hulp, na oprichting van de huisartsenposten, was gedaald met 4%. De resultaten van dit

onderzoek wijzen er dus op dat de reorganisatie van de huisartsendienstenstructuren heeft geleid tot een verschuiving in het aantal patiënten dat buiten kantooruren gebruik maakt van medische voorzieningen van de tweede lijn naar de eerste lijn.

HOOFDSTUK 7

In dit hoofdstuk presenteren we een onderzoek naar tevredenheid van patiënten met de huidige huisartsendienstenstructuren. In de periode van maart tot juni in 2003 hebben we zo'n 2800 patiënten van de vijf Limburgse huisartsendienstenstructuren een vragenlijst toegestuurd. De vragenlijst werd binnen drie weken na contact met de huisartsenpost naar de patiënten verzonden. Eenderde van de vragenlijsten werd gestuurd naar patiënten die alleen een telefonisch contact hebben gehad, eenderde naar patiënten die voor een consult op de huisartsenpost zijn geweest en eenderde naar patiënten waarbij de huisarts een visite had afgelegd. Vier weken nadat een 'reminder' was verstuurd, werd telefonisch een korte vragenlijst afgenomen onder een steekproef van 100 niet-responderende patiënten. De analyses zijn per type verrichting uitgevoerd. De respons bedroeg zo'n 42%. Zevenenzestig procent van de patiënten die alleen telefonisch contact hadden gaf aan tevreden te zijn over het contact met de huisartsenpost. Ongeveer 80% van de patiënten die op de post waren geweest of waarbij de huisarts een visite had afgelegd gaf aan tevreden te zijn over het contact met de huisartsenpost. Factoren die sterk samenhangen met tevredenheid hebben betrekking op opinies van patiënten over de attitude van de doktersassistente aan de telefoon, de behandeling van de huisarts en de wachttijd. Concluderend, patiënten blijken gemiddeld wel tevreden over het contact met de huisartsenpost, maar in geval van alleen een telefonische afhandeling is de tevredenheid een stuk lager. De verwachting van de patiënt over het type verrichting (bijvoorbeeld een visite door de huisarts in plaats van een telefonische afhandeling) speelt mogelijk een grote rol bij dit verschil in tevredenheid.

HOOFDSTUK 8

In dit hoofdstuk beschrijven we een onderzoek naar opinies van patiënten en huisartsen over de telefonische triage tijdens de diensten. Telefonische triage is tegenwoordig een belangrijke element binnen de ANW diensten, en wordt gebruikt om de urgentie van de klacht in te schatten en daarop het te volgen beleid af te stemmen. In dit onderzoek

hebben we opinies van patiënten en huisartsen van twee verschillende huisartsendienstenstructuren onderzocht. Bij de ene huisartsenpost werken de triagisten met computerondersteunende beslissingssoftware (TAS) en bij de andere huisartsenpost wordt het triage proces ondersteund met schriftelijke protocollen en de telefoonwijzer van het Nederlands Huisartsen Genootschap (NHG). Ten behoeve van het onderzoek zijn vragenlijsten ontwikkeld en naar een steekproef van patiënten en naar alle participerende huisartsen uit deze regio's gestuurd. In de vragenlijsten wordt specifiek gevraagd naar opinies over diverse aspecten van telefonische triage. Ongeveer 36% van de patiënten en 80% van de huisartsen heeft de vragenlijst teruggestuurd. De resultaten laten zien dat patiënten uit de regio van de huisartsenpost die werkt met TAS gemiddeld meer tevreden zijn over het telefonisch advies, maar minder tevreden over de telefonische bereikbaarheid dan patiënten uit de andere regio. De huisartsen van de huisartsenpost waar TAS wordt gebruikt waren meer tevreden over hun rol als telefoonarts dan hun collega's van de andere huisartsenpost, maar waren even tevreden over de informatie die door de triagist wordt verstrekt om de telefonische afhandeling te kunnen superviseren en accorderen. Huisartsen van beide posten zijn even tevreden over de selectie van consulten en visites. Het lijkt er op dat patiënten meer tevreden zijn over het telefonisch advies wanneer dit gestandaardiseerd is, zoals dat gebeurt bij het TAS systeem.

HOOFDSTUK 9

In hoofdstuk 9 richtten we ons op het zorgproces nadat de patiënt contact heeft gehad met de huisartsenpost. Tot op heden is er zeer weinig bekend over de redenen en omvang van deze vervolgzorg. Door middel van een vragenlijstenonderzoek zijn we nagegaan hoe vaak en met welke reden mensen alsnog binnen een week nadat men de huisartsenpost heeft gecontacteerd de eigen huisarts voor dezelfde klacht bezoeken. Om na te gaan of andere variabelen (o.a. leeftijd, geslacht, ziektekostenverzekering, de mening van de patiënt over de juistheid van de diagnose, en urgentie en ernst van de klacht volgens de patiënt) ook een rol spelen bij het vervolgbezoek aan de eigen huisarts hebben we een logistische regressie uitgevoerd. De gegevens van dit onderzoek zijn verzameld met behulp van de vragenlijst die is verstrekt aan patiënten beschreven in hoofdstuk 7. Ongeveer 42% van de vragenlijsten is teruggestuurd. In totaal gaf 48% van de respondenten aan binnen een week na contact met de huisartsenpost naar de eigen huisarts te zijn gegaan. Slechts 20% gaf aan dat dit was op verwijzing of advies van de huisarts of doktersassistent van de

huisartsenpost. Overige redenen voor het bezoek aan de eigen huisarts waren: verergering van de klachten en bezorgdheid over de klacht. Andere variabelen die samenhangen met het bezoek aan de eigen huisarts zijn: de mening van de patiënt over de juistheid van de diagnose, type zorgverzekering en de ernst van de klacht volgens de mening van de patiënt. Hoewel de matige respons de generaliseerbaarheid van deze resultaten beperkt, wijst deze studie erop dat een substantieel deel van de patiënten naar de eigen huisarts teruggaat voor dezelfde klacht als waarmee ze de huisartsenpost hebben gecontacteerd. Deze studie is een eerste stap om inzicht te krijgen in de omvang en redenen van vervolgzorg.

HOOFDSTUK 10

In dit hoofdstuk presenteren we een algemene discussie van de resultaten en methodologische aspecten van de studies zoals die zijn beschreven in dit proefschrift. De relevantie van de resultaten wordt bediscussieerd en aanbevelingen voor de organisatie van de huisartsenzorg buiten kantooruren en toekomstig onderzoek worden gegeven. Tevens wordt stilgestaan bij toekomstige ontwikkelingen op het gebied van de ANW diensten. De resultaten in dit proefschrift laten zien dat het geïntegreerde model mogelijkheden biedt om op effectieve wijze een substantieel van de patiënten die, volgens onderzoek, onterecht op de spoedeisende hulp terecht zijn gekomen, in de eerste lijn te behandelen. Dit impliceert dat deze organisatievorm voorwaardelijk is voor een optimale poortwachterfunctie van de huisarts. Het voordeel van dit specifieke model is dat de eerstelijns en tweedelijns zorg op een locatie geconcentreerd zijn wat helderheid voor patiënten geeft over waar ze moeten zijn voor medische klachten buiten kantooruren. Tevens biedt de nauwe samenwerking tussen de spoedeisende hulp en de huisartsenpost een kans om op individueel niveau van zorgverleners ook een sterkere samenwerking te bewerkstelligen. Bijvoorbeeld op het gebied van expertise uitwisseling, afstemming van zorgtaken en begripsvorming over elkanders werkwijzen. Andere belangrijke aspecten van huisartsenzorg buiten kantooruren, zoals telefonische triage, efficiëntie van vervolgzorg, opleidingen voor huisartsen en triagisten, et cetera, verdienen intensieve aandacht van beleidsmakers, professionals en onderzoekers in deze sector van de zorg om het systeem van diensten te optimaliseren.

DANKWOORD

DANKWOORD

Wetenschap doe je niet in je eentje. Dit proefschrift is dus niet alleen de pennenvrucht van mijn persoontje, maar ook die van vele anderen die mij hebben gestimuleerd en ondersteund in het gehele proces van promoveren en daarvoor wil ik hen dus hartelijk danken.

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was dat van alle relevante disciplines een afvaardiging aanwezig was. Dit heeft geleid tot vruchtbare discussies en een brede basis van het onderzoek.

In het begin van mijn promotietraject ben ik eens door Paul Zwietering en Sjoerd Hobma gebeld met de vraag of ik samen met hen een onderzoek wilde doen naar de telefonische triage op de huisartsenpost in Sittard. Ik ben blij dat jullie toen dat initiatief hebben genomen. Later zijn daar ook Andre Ament, Mariëtte Hübben, Marloes Elferink, Ilse Vossen en Elles van Cromvoirt bijgekomen. Ik heb de samenwerking binnen dit project altijd zeer prettig en leuk gevonden. Bedankt voor de leuke tijd. In elk geval hebben we er al één publicatie uit mogen slepen.

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CURRICULUM VITAE

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Caro van Uden werd geboren op 13 september 1971 te Nijmegen. Hij groeide op in Grave waar hij in 1988 de HAVO voltooide. In datzelfde jaar, niet wetende wat anders te doen, begon hij aan de MTS in Nijmegen. Ondanks dat dit geen goede keuze bleek, heeft hij deze opleiding wel afgemaakt. In 1991 startte hij met de opleiding Fysiotherapie te Nijmegen, waarvoor hij in 1995 zijn diploma ontving. Inmiddels geïnteresseerd geraakt in wetenschap vertrok hij in 1995 naar Maastricht om daar Bewegingswetenschappen te gaan studeren. Zijn bul kreeg hij eind 1997. Tussen 1998 en 2001 werkte hij als fysiotherapeut bij Fysiotherapiepraktijk Bronzwaer te Maastricht. Vanaf 1998 is Caro ook parttime werkzaam als onderzoeker op de afdeling Fysiotherapie van het UMC St Radboud Nijmegen. In februari 2001 is hij gestopt als fysiotherapeut en gestart met een promotieonderzoek aan de Universiteit Maastricht en het academisch ziekenhuis Maastricht, wat heeft geresulteerd in dit proefschrift. Op dit moment is Caro werkzaam in Nijmegen en Maastricht, waar hij betrokken is bij diverse projecten op het gebied van huisartsgeneeskunde buiten kantooruren, osteoporose, chronische veneuze insufficiëntie en werkgerelateerde klachten.

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